Howdy!!!!

Mr. Watson

Algebra

What you need:

Pencil

Calculator

EOC

Red Lab

Online Experience

Tutoring on Thursday and Friday!

EOC Sample 2016

Item 1

Selected-Response: 1 point

Which set of data points could be modeled by a decreasing linear function?

A. {(0, 0), (1, 8), (2, 15), (3, 22), (4, 30)}
B. {(0, 5), (1, 6), (2, 10), (3, 16), (4, 28)}
C. {(0, 50), (1, 42), (2, 33), (3, 25), (4, 16)}
D. {(0, 64), (1, 60), (2, 52), (3, 39), (4, 22)}

Item 2

Selected-Response: 1 point

Use these functions to answer this question.

$$P(x) = x^2 - x - 6$$

$$Q(x) = x - 3$$

What is $P(x) - Q(x)$?

A. $x^2 - 3$
B. $x^2 - 9$
C. $x^2 - 2x - 3$
D. $x^2 - 2x - 9$

Item 3

Selected-Response: 1 point

The total daily expenses to operate Sheila's pie bakery are the cost of salaries and ingredients. Sheila has four employees, and she pays each worker a daily rate. On average, it costs the same amount of money to make each pie. This expression shows the total daily expenses for Sheila's bakery to make *x* pies.

$$4(75) + \$0.50x$$

What does the term 4(75) represent?

A. The amount of money Sheila must pay her employees per day.
B. The number of pies Sheila must sell per day.
C. The total cost of expenses per pie.
D. The amount of money customers pay per pie.

Item 4

Selected-Response: 1 point

Which function represents the data in the table?

x	3	6	10	15
y	2.5	4	6	8.5

A. $f(x) = 2x + 1$

B. $f(x) = \frac{x}{2} - 1$

C. $f(x) = 2x - 1$

D. $f(x) = \frac{x}{2} + 1$

Item 5

Selected-Response: 1 point

What is the solution to this system of equations?

$$x - 3y = 1$$

$$x - 2y = 6$$

A. (−4, −5)
B. (−2, −1)
C. (4, 1)
D. (16, 5)

Item 6

Selected-Response: 1 point

Information about the costs of three catering companies is shown in this table.

Catering Company Costs

Acme Catering Company	Best Foods Company	Creative Catering Company
$6 per person plus a flat $100 time and equipment charge	$8 per person plus a flat $40 time and equipment charge	$10 per person charge with no other fees

Gavin can spend no more than $300 on catering. What is the greatest number of people he can invite using one of the three caterers?

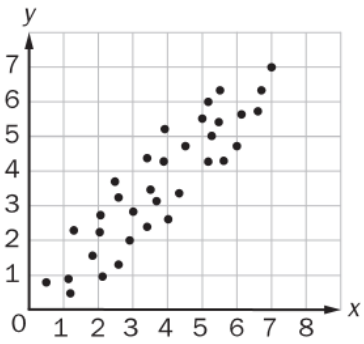
A. 30
B. 32
C. 33
D. 37

Item 7

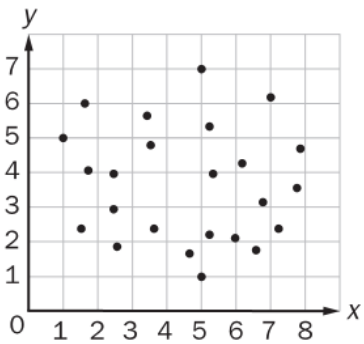
Selected-Response: 1 point

Which set of data could be BEST modeled by a quadratic function?

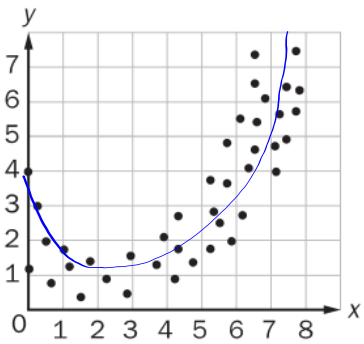
A.



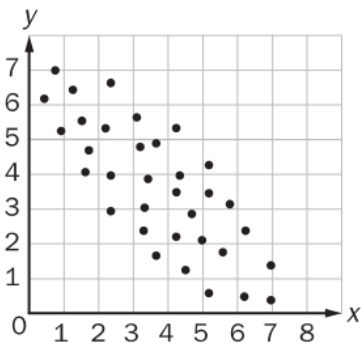
B.



C.



D.



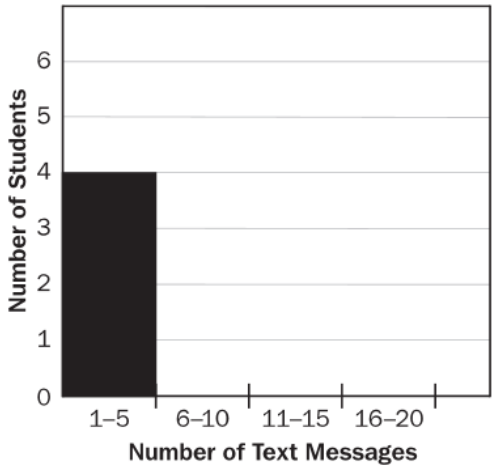
Item 8

Selected-Response: 1 point

This list shows the number of text messages each student in a group sent in one day.

16, 2, 8, 5, 3, 20,
15, 4, 9, 16, 19, 17

The students are creating this histogram to show their data.



What should be the height of the bar for 6–10 text messages?

A. 1
B. 2
C. 4
D. 5

Item 9

Technology-Enhanced: 2 points

The set of ordered pairs shown represents a function *f*.

{(–5, 3), (4, 9), (3, –2), (0, 6)}

Select THREE ordered pairs that could be added to the set so that *f* remains a function.

A. (–3, –2)
B. (4, 0)
C. (0, –1)
D. (1, 6)
E. (2, 3)
F. (–5, 9)

x does not repeat

Item 10

Technology-Enhanced: 2 points

A quadratic function is shown.

$$f(x) = x^2 + 8x + 15$$

+ x

Part A

What is the factored form of $f(x)$ that reveals the zeros of the function?

A. $f(x) = (x + 4)(x + 2)$
B. $f(x) = (x + 3)(x + 5)$
C. $f(x) = (x + 2)(x + 6)$
D. $f(x) = (x + 1)(x + 15)$

Part B

vertex

What is the equivalent form of $f(x)$ that reveals the minimum value of the function?

A. $f(x) = (x + 4)^2 - 1$
B. $f(x) = (x + 3)^2$
C. $f(x) = (x + 2)^2 + 3$
D. $f(x) = (x + 1)^2 + 8$

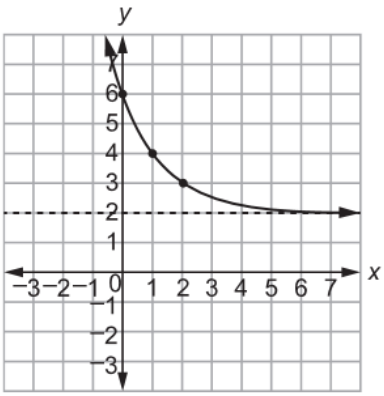
$\frac{-b}{2a} = \frac{-8}{2} = -4$

$y = -1$

Item 11

Technology-Enhanced: 2 points

The graph of the exponential function $f(x) = 4(0.5)^x + 2$ is shown.



Part A

Which function has the same end behavior for large, positive values of x?

A. $g(x) = 4(1.1)^x + 3$
B. $g(x) = 0.5(1.1)^x + 2$
C. $g(x) = 4(0.8)^x + 3$
D. $g(x) = 0.5(0.8)^x + 2$

Part B

Select TWO functions whose graphs have a y-intercept of 1.

A. $h(x) = 5(2)^x$
B. $h(x) = 5(0.5)^x + 0.5$
C. $h(x) = (2)^x$
D. $h(x) = (0.5)^x + 1$
E. $h(x) = 0.5(2)^x + 0.5$

Item 12

Constructed-Response: 2 points

Jill solved the inequality $-\frac{x}{4} < \frac{x+2}{3}$ for x.

Her solution is shown.

Step 1: $-3x < 4x + 8$

Step 2: $-3x - 4x < 8$

Step 3: $-7x < 8$

Step 4: $x < -\frac{8}{7}$

$-\frac{x}{4} < \frac{x+2}{3}$

$-3x < 4x + 8$

$-4x \quad -4x$

$\frac{-7x}{-7} < \frac{8}{-7}$

$x > -\frac{8}{7}$

Part A: Explain the mistake Jill made when solving for x. Write your answer on the lines provided.

Part B: Solve the inequality $-\frac{x}{4} < \frac{x+2}{3}$ for x. Show or explain how you found your answer. Write your answer on the lines provided.

Item 13

Extended Constructed-Response: 4 points

The student council makes an initial investment in a savings account that earns interest. The value of the savings account after m months is determined by the function $v(m) = 2{,}000(1.005)^m$. The student council also has a checking account which has a value after m months that is determined by the function $c(m) = 250 + 100m$.

Part A: What is the initial investment in the savings account?

$2000

Part B: What is the interest rate of the savings account?

.005

When the student council has $2,450 in its checking account, it will purchase new computers for the library.

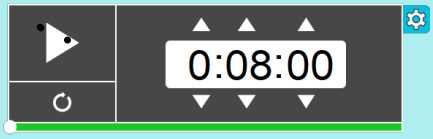
Part C: After how many months will the student council purchase new computers for the library?

$250 + 100m = 2450$ $m = 22$

Part D: How much money will be in the student council's savings account when they purchase the new computers? Explain your reasoning. Write your answer on the lines provided.

Factoring Review

2, 4, 5, 6, 7, 8, 9, 10, 11, 12



Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Chapter 8A: Factoring Polynomials Unit Review

PART I Multiple Choice: Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed.

____ 1. Which expression is equivalent to $9x^2 - 16$?
a. $(3x+4)(3x-4)$
b. $(3x-4)(3x-4)$
c. $(3x+8)(3x-8)$
d. $(3x-8)(3x-8)$

____ 2. Factored completely, the expression $2y^2 + 12y - 54$ is equivalent to
a. $2(y+9)(y-3)$
b. $2(y-3)(y-9)$
c. $(y+6)(2y-9)$
d. $(2y+6)(y-9)$

$2(y^2 + 6y - 27)$

____ 3. Factored, the expression $16x^2 - 25y^2$ is equivalent to
a. $(4x-5y)(4x+5y)$
b. $(4x-5y)(4x-5y)$
c. $(8x-5y)(8x+5y)$
d. $(8x-5y)(8x-5y)$

____ 4. Which expression is a factor of $x^2 + 2x - 15$?
a. $(x+3)$
b. $(x+15)$
c. $(x-5)$
d. $(x-3)$

$(x+5)(x-3)$

____ 5. What are the factors of $x^2 - 2x - 24$?
a. $(x-4)(x+6)$
b. $(x-12)(x+2)$
c. $(x+12)(x-2)$
d. $(x+4)(x-6)$

____ 6. If one factor of $21xy^3 - 15x^2y^2$ is $3xy^2$, what is the other factor?
a. $7x^2 - 5y$
b. $7y^2 - 5x^2$
c. $7y - 5x$
d. $7xy - 5x^2$

$\frac{21xy^3}{3xy^2} - \frac{15x^2y^2}{3xy^2}$

$7y - 5x$

Name: _____ **ID: A**

____ 7. What is a common factor of $x^2 - 9$ and $x^2 + x - 6$?

a. $x - 3$
b. x^2
c. $x + 3$
d. $x - 2$

$x^2 + 0x - 9$ $(x-3)(x+3)$ $x^2 + x - 6$ $(x+3)(x-2)$

____ 8. If $4x$ is one factor of $4x^2 - 12x$, what is the other factor?

a. $x^2 - 8x$
b. $x - 3$
c. $4x$
d. $x + 3$

$\frac{4x^2}{4x} - \frac{12x}{4x}$ $x - 3$

____ 9. Factor $d^2 - 14d + 49$

a. $(d + 7)^2$
b. $(d - 7)^2$
c. $(d - 7)(d + 7)$
d. $(d - 49)(d - 1)$

$+$ $\times$

____ 10. Which expression represents $\frac{12x^3 - 6x^2 + 2x}{2x}$ in simplest form?

a. $6x^2 - 3x$
b. $10x^2 - 4x$
c. $6x^2 - 3x + 1$
d. $10x^2 - 4x + 1$

$6x^2 - 3x + 1$

____ 11. When $3g^2 - 4g + 2$ is subtracted from $7g^2 + 5g - 1$, the difference is

a. $-4g^2 - 9g + 3$
b. $4g^2 + g + 1$
c. $4g^2 + 9g - 3$
d. $10g^2 + g + 1$

$7g^2 + 5g - 1 - (3g^2 - 4g + 2)$
$7g^2 + 5g - 1 - 3g^2 + 4g + 2$

____ 12. What is the value of p in the equation $8p + 2 = 4p - 10$?

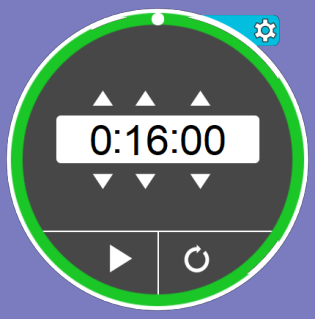
a. 1
b. -1
c. 3
d. -3

$-4p \quad -4p$
$4p + 2 = -10$
$-2 \quad -2$
$\frac{4p}{4} = \frac{-12}{4}$
$p = -3$

Quadratics MC Review

1, 2, 4, 5, 7, 8, 9, 10, 11, 12, 13

14,17, 21, 22, 24, 25, 30, 31, 34



Name: _____

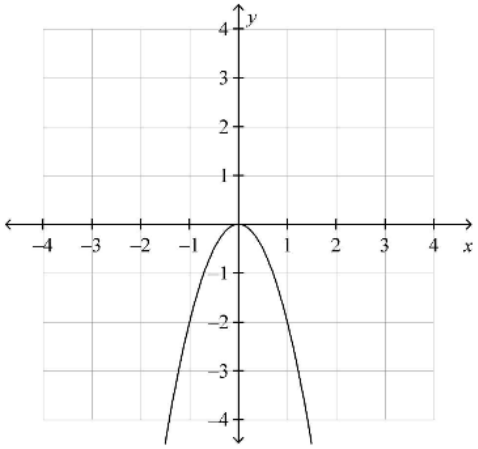
Class: _____ Date: _____

PostAssessment Quadratic Unit

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ **1** Identify the vertex of the graph. Tell whether it is a minimum or maximum.



A (0, 1); maximum
B (0, 0); minimum
C (0, 1); minimum
D (0, 0); maximum

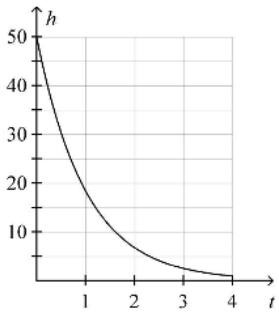
____ **2** Which of the quadratic functions has the narrowest graph?

A $y=-3x^2$ **B** $y=-2x^2$ **C** $y=\frac{1}{11}x^2$ **D** $y=\frac{1}{5}x^2$

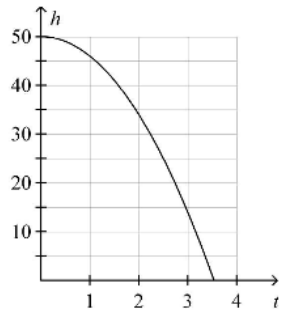
Stretch 3 Stretch 2 Shrink 1/11 Shrink 1/5

___ 3 If an object is dropped from a height of 50 feet, the function $h(t) = -16t^2 + 50$ gives the height of the object after t seconds. Graph the function.

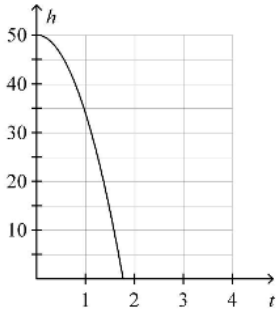
A



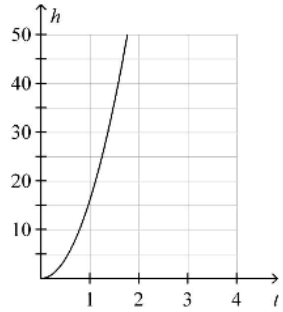
C



B



D



___ 4 Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of

$y = 4x^2 + 5x - 1$

A $x = \frac{5}{8}$; vertex: $\left(\frac{5}{8}, 4\frac{5}{8}\right)$

B $x = \frac{5}{8}$; vertex: $\left(\frac{5}{8}, 3\frac{11}{16}\right)$

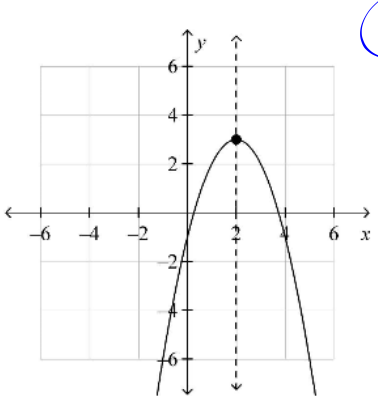
C $x = -\frac{5}{8}$; vertex: $\left(-\frac{5}{8}, -5\frac{11}{16}\right)$

D $x = -\frac{5}{8}$; vertex: $\left(-\frac{5}{8}, -2\frac{9}{16}\right)$

$(-1, -3)$
close approx

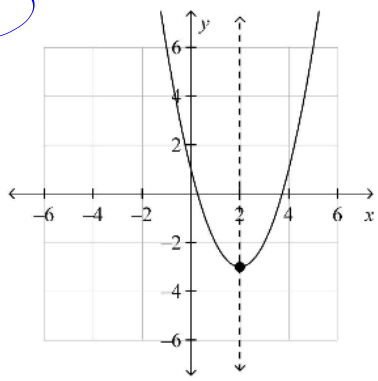
____ 5 Graph $f(x)=x^2-4x+1$. Label the axis of symmetry and vertex.

A



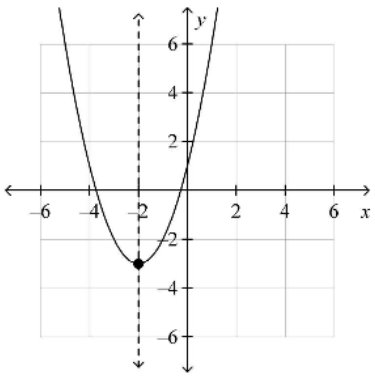
Axis of symmetry: $x=2$
Vertex: $(2, 3)$

C



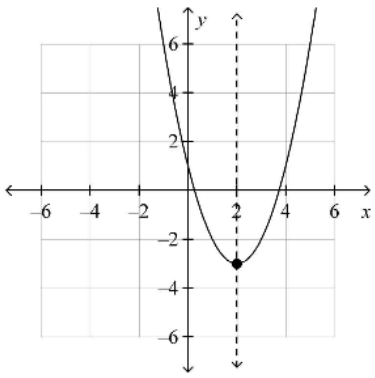
Axis of symmetry: $x=2$
Vertex: $(2, -3)$

B



Axis of symmetry: $x=-2$
Vertex: $(-2, -3)$

D



Axis of symmetry: $x=2$
Vertex: $(2, 3)$

____ 6 Suppose you have 56 feet of fencing to enclose a rectangular dog pen. The function $A = 28x - x^2$, where x = width, gives you the area of the dog pen in square feet. What width gives you the maximum area? What is the maximum area? Round to the nearest tenth as necessary.

A width = 14 ft; area = 196 ft^2
B width = 14 ft; area = 588 ft^2
C width = 28 ft; area = 420 ft^2
D width = 28 ft; area = 196 ft^2

____ 7 A ball is thrown into the air with an upward velocity of 40 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 40t + 10$. In how many seconds does the ball reach its maximum height? Round to the nearest hundredth if necessary. What is the ball's maximum height?

A 1.25 s; 85 ft **B** 1.25 s; 40 ft **C** 1.25 s; 35 ft **D** 2.5 s; 10 ft

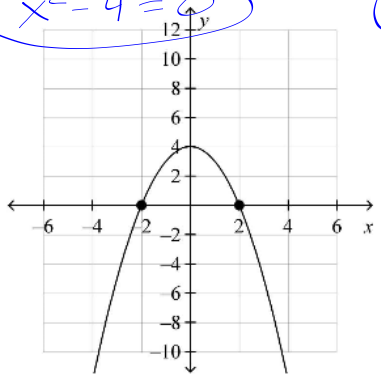
$\frac{-b}{2a} = \frac{-40}{2(-16)} = \frac{-40}{-32} = 1.25$

____ **8** Solve $x^2+2=6$ by graphing the related function.

$-6 \quad -6$

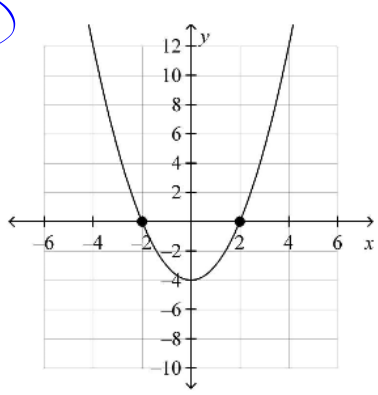
$x^2-4=0$

A



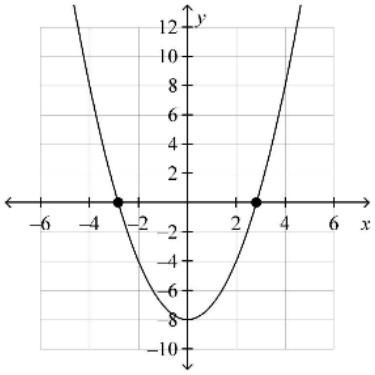
There are two solutions: 2 and -2.

C



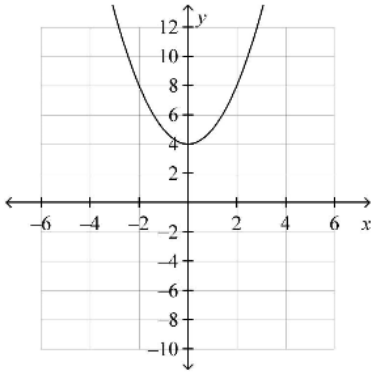
There are two solutions: 2 and -2.

B



There are two solutions: $\pm\sqrt{8}$.

D



There are no real number solutions.

Solve the following equations using square roots.

$x^2 - 15 = 34$
$+15 \quad +15$
$\sqrt{x^2} = \sqrt{49}$
$x = \pm 7$

___ 9 $x^2 - 15 = 34$

A ± 49
B ± 7
C 7
D no real number solutions

___ 10 $x^2 + 20 = 4$

A $\sqrt{24}$
B -4
C $\pm\sqrt{24}$
D no real number solutions

___ 11 Solve $(x-11)(x-5)=0$ using the Zero Product Property.

A $x = 11$ or $x = 5$
B $x = -11$ or $x = 5$
C $x = -11$ or $x = -5$
D $x = 11$ or $x = -5$

Solve the following equations by factoring.

___ 12 $z^2 - 11z + 30 = 0$ (+ and ×)

$(x-6)(x+5)=0$
$x = 6 \quad x = -5$

A $z = -5$ or $z = 6$
B $z = -5$ or $z = -6$
C $z = 5$ or $z = 6$
D $z = 5$ or $z = -6$

___ 13 $3z^2 - 6z + 3 = 0$

$\frac{3}{3} \quad \frac{-6}{3} \quad \frac{3}{3}$

$z^2 - 2z + 1$ (+ and ×)
$(z-1)(z-1)$
$z = 1 \quad z = 1$

A $z = 3$ or $z = 1$
B $z = 1$ or $z = 1$
C $z = 1$ or $z = -1$
D $z = 3$ or $z = -1$

____ **14** $c^2 - 6c = 0$

A $c = 1$ or $c = -\sqrt{6}$ **C** $c = 0$ or $c = \sqrt{6}$
B $c = 0$ or $c = 6$ **D** $c = 0$ or $c = -6$

____ **15** The expression $ax^2 - bx = 0$ _____ has the solution $x = 0$.

A always **B** sometimes **C** never

Solve the following equtions by completing the square.

____ **16** $x^2 - 6x = -15$

A $-3 \pm 2i\sqrt{6}$ **B** $3 \pm i\sqrt{6}$ **C** $3 \pm \sqrt{6}$ **D** $-3 \pm 2\sqrt{6}$

____ **17** $x^2 - 4x - 6 = 0$

A -8, 12 **B** 4, 0 **C** 1.41, 3.16 **D** 5.16, -1.16

Use the Quadratic Formula to solve the following equations.

____ **18** $2a^2 - 46a + 252 = 0$

A 18, 28 **B** -9, -14 **C** 9, 14 **D** -18, 28

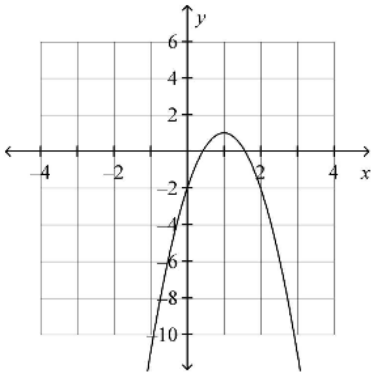
____ **19** $x^2 + 6x + 18 = 0$

A no solution **B** 0, -6 **C** $-3 \pm 3i$ **D** $-3 \pm 3\sqrt{3}$

____ **20** A rocket is launched from atop a 58-foot cliff with an initial velocity of 141 ft/s. Substitute the values into the vertical motion formula $h=-16t^2+vt+c$. Let $h = 0$. Use the quadratic formula find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.

A $0=-16t^2+141t+58$; 9.2 s
B $0=-16t^2+58t+141$; 0.4 s
C $0=-16t^2+141t+58$; 0.4 s
D $0=-16t^2+58t+141$; 9.2 s

____ **21** For which discriminant is the graph possible?



A $b^2-4ac=-9$
B $b^2-4ac=4$
C $b^2-4ac=0$

Find the number of real solutions for the following equations.

____ **22** $x^2-18x+81=0$

A 2
B 1
C 0

____ **23** $x^2-2=0$

A 1
B 2
C 0

Use the following functions to answer the next set of questions: $f(x)=3x-2$, $g(x)=3x^2+2x-1$, $h(x)=4x+8$ and $k(x)=2x^2-x-9$.

____ **24** Find g(x) + k(x).

A $-5x^2-x+10$
B $-x^2-3x-8$
C $5x^2+x-10$
D x^2+3x+8

____ **25** Find $f(x)\cdot h(x)$.

A $12x^2+16x-16$
B $12x^2-16$
C $12x^2+32x-16$
D $12x^2+32x+16$

____ **26** Find $\left(\frac{f}{h}\right)(2)$.

A 4
B $\frac{1}{4}$
C 2
D $\frac{1}{2}$

____ **27** Find (g - k)(3).

A 24
B 86
C 38
D 26

____ **28** Find the inverse of the function: $f(x)=x^2-4$. Is the inverse a function?

A $f^{-1}(x)=x^2+4$; yes it is a function.

B $f^{-1}(x)=\pm\sqrt{x+4}$; yes it is a function.

C $f^{-1}(x)=\pm\sqrt{x+4}$; no it is not a function.

D $f^{-1}(x)=x^2+4$; no it is not a function

____ **29** Find the inverse of the function: $f(x)=(x-2)^2+3$. State the domain and range of the inverse.

A $f^{-1}(x)=\pm\sqrt{x-3}+2$ Domain: $\{x\,|\,x\in\Re\}$ Range: $\{y\,|\,y\geq 3\}$

B $f^{-1}(x)=\pm\sqrt{x-3}+2$ Domain: $\{x\,|\,x\geq 3\}$ Range: $\{y\,|\,y\in\Re\}$

C $f^{-1}(x)=\pm\sqrt{x+3}-2$ Domain: $\{x\,|\,x\in\Re\}$ Range: $\{y\,|\,y\geq 3\}$

D $f^{-1}(x)=\pm\sqrt{x+3}-2$ Domain: $\{x\,|\,x\geq 3\}$ Range: $\{y\,|\,y\in\Re\}$

____ **30** What transformation of the parent function, $f(x)=x^2$, is the function $f(x)=-(x+2)^2$?

A Reflect across the x-axis and translate right 2.

B Reflect across the y-axis and translate up 2.

C Reflect across the x-axis and translate left 2.

D Reflect across the y-axis and translate down 2.

____ **31** Write a function that represents the parent function, $y=x^2$, after it has been translated 3 up and 2 right.

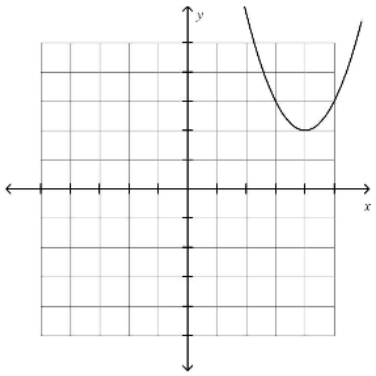
A $y=(x-3)^2+2$

B $y=(x-2)^2+3$

C $y=(x+3)^2-2$

D $y=(x+2)^2-3$

____ **32** What function models the graph below?



A $y=(x+4)^2+2$

B $y=(x+2)^2+4$

C $y=(x-4)^2+2$

D $y=(x-4)^2-2$

____ **33** Use the second difference to determine which equation models the table below:

x	-3	-2	-1	0	1	2	3	4
y	28	12	0	-8	-12	-12	-8	0

A $f(x)=(x-4)(x+1)$

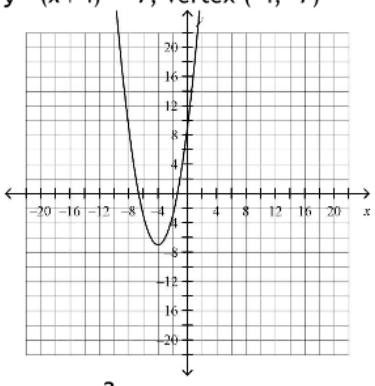
B $f(x)=4(x-4)(x+1)$

C $f(x)=2(x+4)(x-1)$

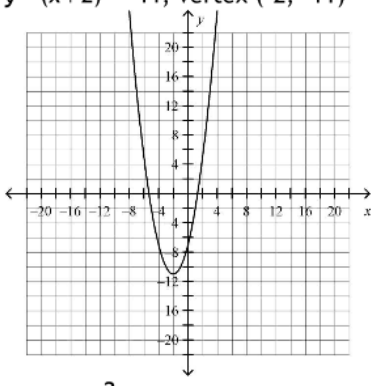
D $f(x)=2(x-4)(x+1)$

____ **34** Convert $y=x^2+4x-7$ to vertex form, identify the vertex and the graph.

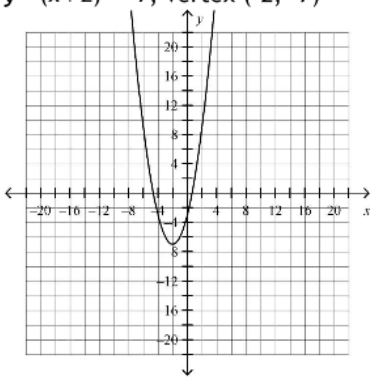
A $y=(x+4)^2-7$; vertex (-4, -7)



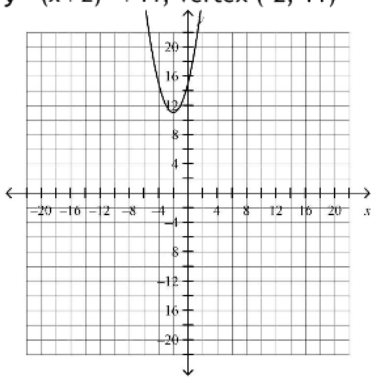
C $y=(x+2)^2-11$; vertex (-2, -11)



B $y=(x+2)^2-7$; vertex (-2, -7)



D $y=(x+2)^2+11$; vertex (-2, 11)



EOC Review

Algebra 1 Name_____ ID: 1

EOC Review

Date_____ Period____

Solve each equation.

1) $p - 5 = 11 - 3p$

2) $n + 8 = 16 + 3n$

3) $7 - 7r = 1 - 8r$

4) $28 - 8m = 4(2 - 3m)$

5) $-3 - 3(8 + 6x) = -4x + 29$

6) $-6(4 - 6n) = 36 + 6n$

Solve each equation for the indicated variable.

7) $g = c - x + y$, for x

8) $g = a + c + b$, for a

9) $am = p + n$, for a

10) $u = xk + y$, for x

11) $z = b + \frac{m}{a}$, for a

12) $\frac{c}{a} = d + r$, for a

Factor each completely.

13) $n^2 + 10n$

14) $x^2 + 2x$

15) $n^2 + n - 56$

16) $p^2 - 5p - 6$

17) $x^2 - 49$

18) $x^2 + 9x + 20$

19) $2x^2 - 22x + 20$

20) $5r^2 + 75r + 280$

21) $4x^2 + 60x + 224$

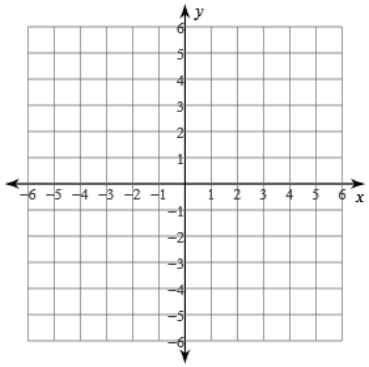
22) $2b^2 + 10b - 72$

23) $3n^2 - 27n$

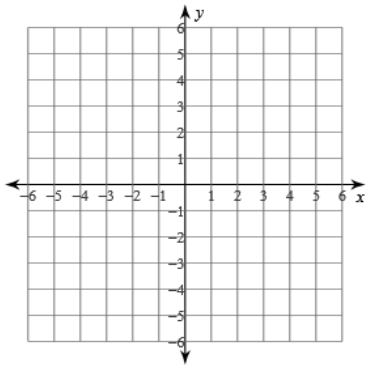
24) $3x^2 + 9x - 30$

Sketch the graph of each line.

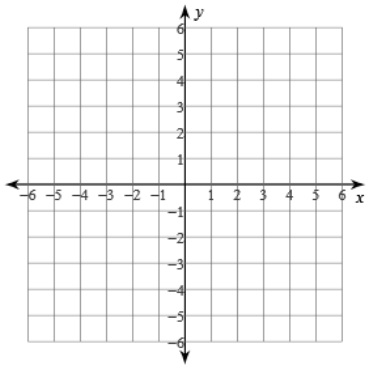
25) $y = -\frac{1}{2}x + 2$



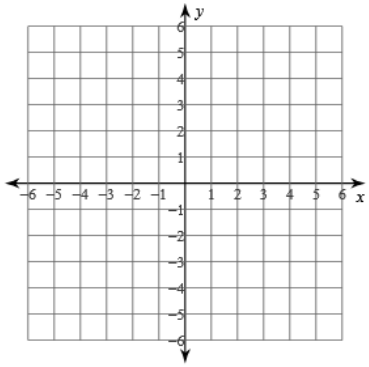
26) $y = x - 1$



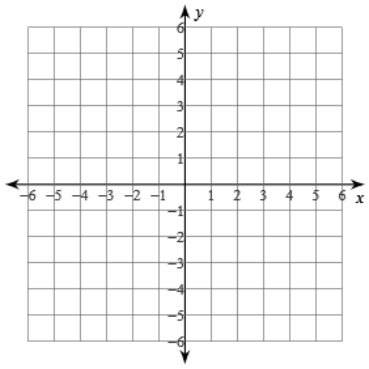
27) $y = -\frac{1}{4}x - 3$



28) $x + y = 5$



29) $5x + 4y = -16$



30) $5x + y = 4$