EPISD_Fall2016_SemesterExam_Alg2

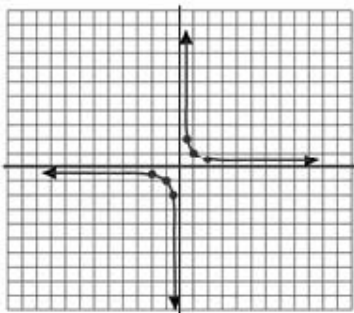**1** Which of the following is a graph of the function $y = \sqrt{x}$?
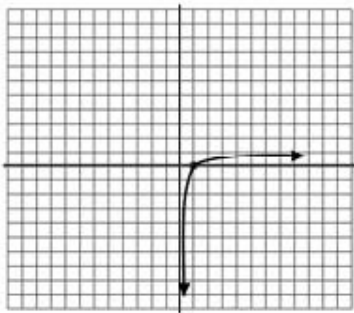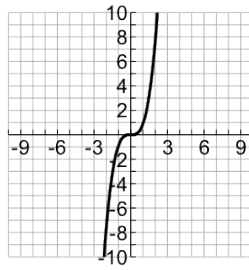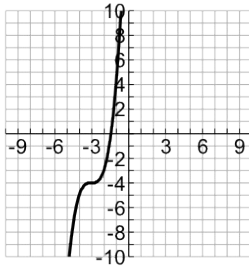
A
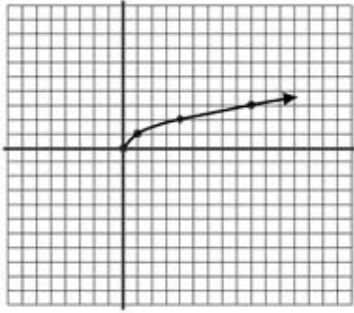
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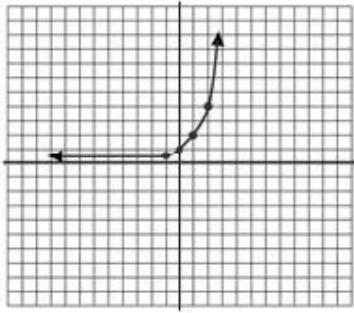
C

D

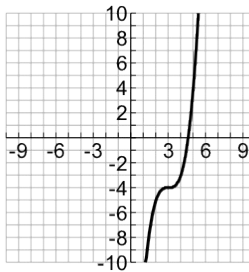**2** The graph of the parent cubic function, $f(x) = x^3$ is shown below.

Which graph best represents the function $f(x + 3) - 4$?
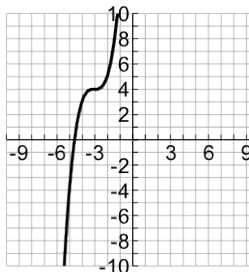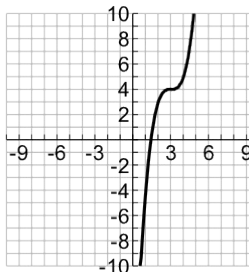
F

G

H

J

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3 If the parent cube root function, $f(x)$, is transformed to $2f(x + 5)$ what will be the effect on the graph?

A The graph will shift 5 units to the right and will be vertically stretched such that all the corresponding y-values will be multiplied by 2.

B The graph will shift 5 units to the left and will be vertically stretched such that all the corresponding y-values will be multiplied by 2.

C The graph will shift 5 units to the left and will be vertically compressed such that all the corresponding y-values will be divided by 2.

D The graph will shift 5 units to the right and will be vertically compressed such that all the corresponding y-values will be divided by 2.

4 If the parent cubic function, $f(x) = x^3$, is transformed to $f(x) = \frac{1}{2}x^3 + 2$ what will be the effect on the graph of the parent function?

F The graph will shift 2 units left and be vertically compressed so the graph will appear wider.

G The graph will shift 2 units right and will be vertically compressed so that the graph will appear narrower.

H The graph will shift 2 units up and will be vertically compressed so that the graph will appear wider.

J The graph will shift 2 units up and will be vertically stretched so that the graph will appear narrower.

5   Which equation is represented by the graph below?
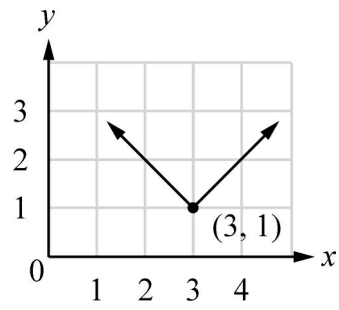
A $y = |x| - 3$

B $y = |x + 3| - 1$

C $y = |x - 3| + 1$

D $y = (x - 3)^2 + 1$

6 Molly transformed the parent absolute value function by shifting it 3 units up and 4 units right as part of her homework. Which of the following functions reflects the transformation Molly did to the graph?
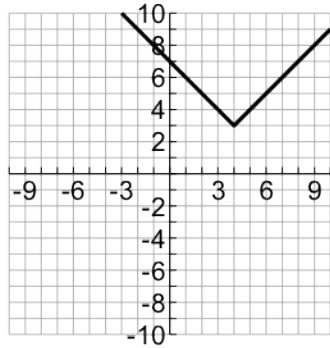
F $f(x) = |x - 4| + 3$

G $f(x) = |x + 4| + 3$

H $f(x) = |x + 3| - 4$

J $f(x) = |x - 3| + 4$

7 Which of the following describes the solution set for $|-4 + 5x| = 16$?

A $\{4\}$

B $\{4, -4\}$

C $\left\{4, -\dfrac{12}{5}\right\}$

D $\left\{-\dfrac{12}{5}\right\}$

8 Which of the following shows a correct solution process for $|x + 8| - 5 = 2$?

F
$$|x + 8| - 5 = 2$$
$$|x + 8| = 7$$
$$x + 8 = 7 \qquad x + 8 = -7$$
$$x = -1 \qquad x = -15$$

G
$$|x + 8| - 5 = 2$$
$$|x + 8| = 7$$
$$x + 8 = 7 \qquad x - 8 = -7$$
$$x = -1 \qquad x = 15$$

H
$$|x + 8| - 5 = 2$$
$$|x + 8| = 7$$
$$x + 8 = 7 \qquad x - 8 = -7$$
$$x = -1 \qquad x = 1$$

J
$$|x + 8| - 5 = 2$$
$$|x + 8| = 7$$
$$x + 3 = 7 \qquad x + 3 = -7$$
$$x = 4 \qquad x = -10$$

9 Which of the following represents the correct solution set to $|5 - 4x| + 2 < 6$?

A $x > \dfrac{1}{4}$ and $x < \dfrac{1}{4}$

B $x > \dfrac{1}{4}$ and $x < \dfrac{9}{4}$

C $x > \dfrac{1}{4}$ and $x > \dfrac{9}{4}$

D $x < \dfrac{1}{4}$ and $x > \dfrac{9}{4}$

10 Jennie solved the following absolute value inequality and her work is shown below.

$$|2x+3| < x+6$$
$$2x+3 < x+6 \text{ and } 2x+3 > -x+6$$
$$x < 3 \text{ and } 3x > 3$$
$$x < 3 \text{ and } x > 1$$
$$1 < x < 3$$

Which of the following best explains Jennie's solution?

F Jennie's solution is correct.

G Jennie's solution is incorrect. She should have used the < symbol in both parts of the problem solution.

H Jennie's solution is incorrect. She should have used parentheses around $x + 6$ in the second part of the problem solution.

J Jennie's solution is incorrect. She should not have used a negative sign in the second part of the problem solution.

11 Solve by factoring $2x^2+32x=72$

A 12, -3

B -12, 3

C 18, -2

D -18, 2

12 Solve for $6x^2-40=x$

F 5,-8

G -5/2, 8/3

H -5, 8

J 5/2, -8/3

13 The length of a rectangle exceeds the width by 5 inches. The area of the rectangle is 84 square inches. Find the width of the rectangle.

A 7 inches

B 6 inches

C 4 inches

D 3 inches

14 Solve for x in the equation below

$x^2+16x=36$

F 12, -3

G -12, 3

H 18, -2

J -18, 2

15 Simplify the following expression:

$4 + 3i - (-6 - 4i) - 2i$

16 Which of the following best represents the solution to $8 + i(8 - i) - 4i(-2i + 6)$?

F $7 + 8i$

G $-1 - 16i$

H $17 + 32i$

J $1 - 16i$

17 Marla was simplifying an expression involving complex numbers. Her work is shown below.

$(8 + 9i)(7 - 3i)$
$56 - 24i + 63i - 27i^2$
$56 - 39i + 27i$
$56 - 12i$

Which of the following best explains Marla's solution process?

A Marla's answer is correct.

B Marla should have converted i^2 to -1 and not to $-i$. The solution should be $83 - 39i$.

C Marla incorrectly converted the last term. It should be $-27i$ and the solution would be $56 - 66i$.

D Marla incorrectly converted i^2 to -1 when it coverts to 1. The solution should be $29 - 39i$.

18 The product of two complex numbers is shown below.

$$(3 + 5i)(6 + 2i)$$

Which of the following is equal to this product?

F $-28 + 36i$

G $8 - 36i$

H $8 + 36i$

J $28 + 24i$

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19 Solve for a in the equation below:

$$5a^2 + 8 = 2a$$

A $\dfrac{1 \pm i\sqrt{41}}{5}$

B $\dfrac{-4 \pm \sqrt{26}}{5}$

C $\dfrac{1 \pm i\sqrt{39}}{5}$

D $\dfrac{-4 \pm \sqrt{6}}{5}$

20 Which of the following best represents the solution to $8 + i(8 - i) - 4i(-2i + 6)$?

F $7 + 8i$

G $-1 - 16i$

H $17 + 32i$

J $1 - 16i$

21 Carlo was simplifying the expression

$\sqrt{32}$ on his homework. He recorded

his answer as $16\sqrt{2}$. What mistake did
Carlo make in simplifying?

A Carlo did not make a mistake.

B He should have taken the square root of 16 instead of writing 16.

C He should have not have a square root in his answer because 4 (4 + 4) = 32 and 4 is a perfect square.

D He should not have written the 16 on the outside and instead left it as 4 under the radical symbol.

22 Solve the following quadratic equation.

$$3(x-2)^2 - 12 = 0$$

F x = -6, 2

G x = 0, -4

H x = 0, 4

J x = 6, -2

23 Solve the following equation.

$$x^2 - 8x + 14 = 0$$

A $\quad 4 \pm \sqrt{2}$

B $\quad 4 \pm \sqrt{30}$

C $\quad -4 \pm \sqrt{2}$

D $\quad -4 \pm \sqrt{30}$

24 Solve the following equation.

$$2x^2 + 8x + 22 = 0$$

F $\quad 2 \pm i\sqrt{7}$

G $\quad -2 \pm i\sqrt{7}$

H $\quad -2 \pm 3i\sqrt{2}$

J $\quad 2 \pm 3i\sqrt{2}$

25 Find the value(s) of c that make(s) $x^2 - 16x + c$ a perfect square.

A $\quad 64$

B $\quad \pm 64$

C $\quad 256$

D $\quad \pm 256$

26 Given the quadratic function $f(x) = 3x^2 - 24x + 44$, determine which of the statements below are true.

I. The vertex is (-4, 4)

II. The axis of symmetry is $x = 4$

III. The y-intercept (0, 44)

IV. The range is [-4, ∞]

F I, II and III

G II, III, and IV

H I and IV

J I, II, and III

27 Mike was solving a quadratic inequality as part of his homework. The question asked him to find the solution set to $x^2 - x - 12 > 0$ and to write the solution set using interval notation.

Mike determined the answer was $(-3, 4)$. Which of the following best explains if Mike is correct, or if he is incorrect, the error he made.

A Mike is correct in his answer.

B Mike is incorrect. He should have represented the values as $[-3, 4]$ since the x-values -3 and 4 are included in the solution set.

C Mike is incorrect. The solution set is $(-3, \infty)$ because all values larger than -3 work in the equation.

D Mike is incorrect. The solution actually includes all real numbers except the interval he wrote. The solution set is $(-\infty, -3) \cup (4, \infty)$.

28 Write the equation of the graph below in vertex form.
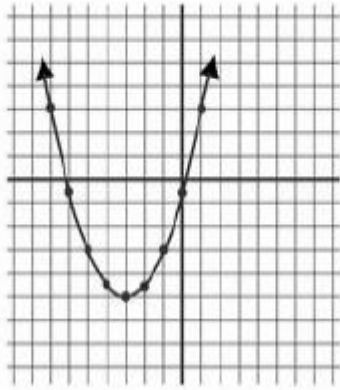
F $y = 2(x-3)^2 - 5$

G $y = 2(x+3)^2 - 5$

H $y = 1/2 (x-3)^2 - 5$

J $y = 1/2 (x+3)^2 - 5$

29 Callie needs to plot a parabola for a demonstration about the beam of a headlamp on a car. The focus of the parabola will be at point (7, 3) and the vertex of the parabola is at point (5, 3). The parabola will open to the right on her illustration. Which can be the equation of the parabola Callie will need to plot?

A $8(y - 3) = (x - 5)^2$

B $8(x - 5) = (y - 3)^2$

C $8(x - 5)^2 = (y - 3)$

D $8(x - 3)^2 = (y - 5)$

30 Which quadratic function has a graph that passes through the points (−1, 4), (2, −5), and (4, 9)?

F $f(x) = 2x^2 - 5x - 3$

G $f(x) = -2x^2 - x + 5$

H $f(x) = 0.5x^2 - 3.5x$

J $f(x) = x^2 + 7x + 10$

31 A bike shop rents each of its mountain bikes for a one-time $10.50 insurance charge plus $4.50 per hour. Which equation can be used to find y, the total dollar amount that a group of sightseers must pay to rent x bikes for 6 hours?
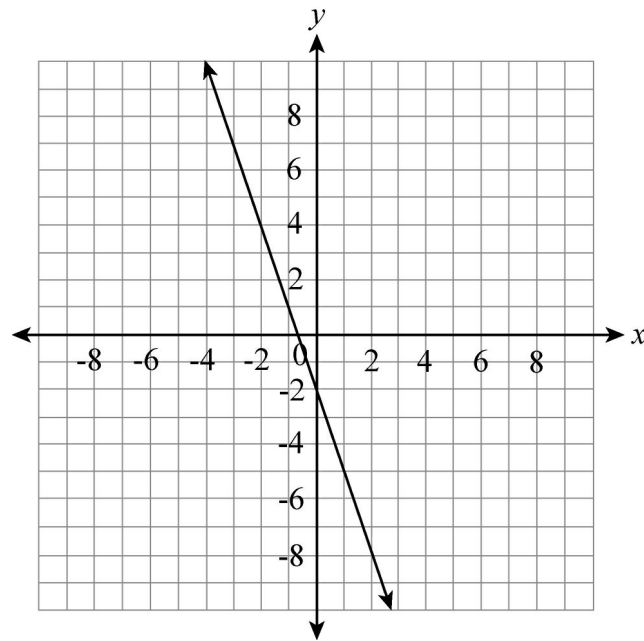
A $y = 15 + 6x$

B $y = 10.50 + 27x$

C $y = 90x$

D $y = 37.50x$

32 A graph is shown on the grid below.

Which of the following equations best represents the graph?

F $y = -3x - 2$

G $y = -3x + 2$

H $y = 3x - 2$

J $y = 3x + 2$

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON YOUR ANSWER DOCUMENT   STOP