1

Given $2x - 8 = 3y + 4$, what is the value of x if y equivalent to the square of 2?

$y = 2^2$

$y = 4$

A. 4

B. 8

C. 12

D. 24

$2x - 8 = 3(4) + 4$

$2x - 8 = 16$

$2x = 16 + 8$

$2x = \dfrac{24}{2}$

$x = 12$

2

$x - 2 = \sqrt{x + 10}$

Which of the following values of x is a solution to the equation above?

A) -1 $-1 - 2 = -3$

B) 1 $1 - 2 = -1$

C) 4 $4 - 2 = 2 \neq \dfrac{\sqrt{4+10}}{\sqrt{14}}$

D) 6

3

If $|-2b - 3| \le 7$, how many possible integer values of b are there?

$-7 \le -2b - 3 \le 7$

$+3 \qquad\qquad +3$

$\dfrac{-4}{-2} \le \dfrac{-2b}{-2} \le \dfrac{10}{-2}$

$2 \ge b \ge -5$

$-5, -4, -3, -2, -1, 0, 1, 2$

$\boxed{8}$

4

If $\dfrac{2a}{3b} = \dfrac{1}{5}$, what is the value of $\dfrac{b}{a}$?

$10a = 3b$

$\dfrac{b}{a} = \dfrac{10}{3}$

5

If $3 < 2x + 7 \le 15$, which of the following integers represents the smallest value for $x + 3$?

A. 1

B. 2

C. -2

D. -1

$\dfrac{-4}{2} < \dfrac{2x}{2} \le \dfrac{8}{2}$

$-2 < x \le 4$

$-1, 0, 1, 2, 3, 4$

$x + 3$

$-1 + 3 = 2$

6

If $\dfrac{4x}{-4} + 14y = -7$, what is the value of $-x - \dfrac{7}{2}y$?

A. $-\dfrac{7}{4}$

B. $\dfrac{7}{4}$

C. $-\dfrac{7}{2}$

D. $\dfrac{7}{2}$

$\dfrac{4x}{-4} + \dfrac{14y}{-4} = \dfrac{-7}{-4}$

$-x - \dfrac{7}{2}x = \dfrac{7}{4}$

1

shift solve
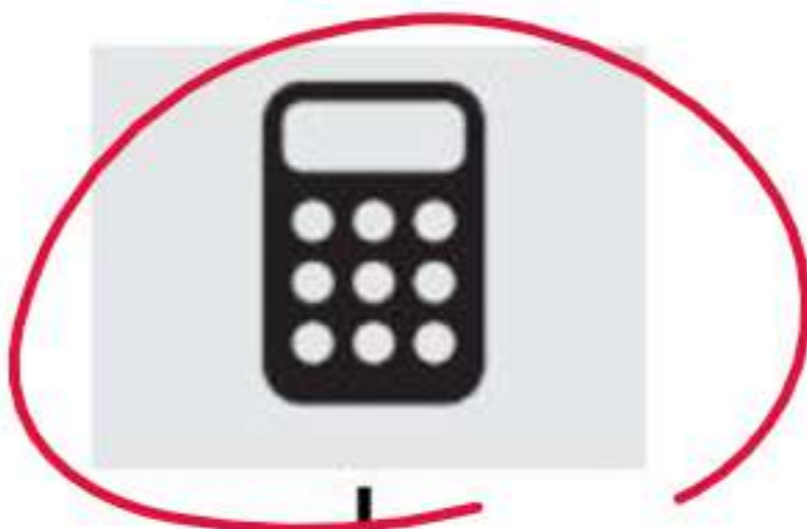
$$2\left(\frac{x}{3} - \frac{1}{4}\right) - 2x = \frac{2}{5}$$

What is the solution to the equation above?

A. $x = -\frac{9}{28}$

B. $x = -\frac{27}{40}$

C. $x = -\frac{27}{10}$

D. $x = -\frac{3}{40}$

2

$$|2x + 1| = 5$$

Which of the following is possible value of x?

A. 1

B. 0

✗ C. -2

D. -3

$2x + 1 = 5$ $2x + 1 = -5$

$2x = 4$ $2x = -6$

$x = 2$ $x = \frac{-6}{2}$

      $x = -3$

3

$$5x^2 - 3(1-x) - 2x(x+5)$$

Which of the following polynomials is equivalent to the expression above?

A) $3x^2 - 7x - 3$

B) $3x^2 + 7x - 3$

C) $5x^2 - 5x - 3$

D) $5x^2 - 9x - 3$

4

$$-3 < 2x - y \le 14$$

Which point could be the solution for the inequality above?

     $x \; y$

A. $(0, 3)$ $2(0) - 3 = -3$

B. $(4, -8)$ $2(4) - (-8) = 16$

C. $(3, 4)$ $2(3) - 4 = 2$

D. $(4, 12)$

5

Jackie has two summer jobs. She works as a tutor, which pays \$12 per hour, and she works as a lifeguard, which pays \$9.50 per hour. She can work no more than 20 hours per week, but she wants to earn at least \$220 per week. Which of the following systems of inequalities represents this situation in terms of x and y, where x is the number of hours she tutors and y is the number of hours she works as a lifeguard?

≤ 20

A) $12x + 9.5y \le 220$
$x + y \ge 20$ ✗

≥ 220

B) $12x + 9.5y \le 220$ ✗
$x + y \le 20$ ✓

C) $12x + 9.5y \ge 220$ ✓
$x + y \le 20$ ✓

D) $12x + 9.5y \ge 220$
$x + y \ge 20$ ✗

6

$$(2x - 1)(x + 5)$$

The given expression is equivalent to $ax^2 + bx + c$, where a, b and c are constants. What is the value of b?

$10x - 1x$

$= 9x$

$\boxed{9}$

Circles

$$(x-h)^2 + (y-k)^2 = r^2$$

Center = (h, k)

Radius = $\sqrt{r^2}$

$$x^2 + ax + y^2 + by = C$$

Center = $\left(\dfrac{a}{-2}, \dfrac{b}{-2}\right)$

Radius = $\sqrt{\left(\dfrac{a}{-2}\right)^2 + \left(\dfrac{b}{-2}\right)^2 + C}$

$$(x-2)^2 + (y+5)^2 = 16$$

Center = $(2, -5)$

Radius = $\sqrt{16} = 4$

$$x^2 - 4x + y^2 + 10y = 7$$

Center = $\left(\dfrac{-4}{-2}, \dfrac{10}{-2}\right)$

Radius = $\sqrt{\left(\dfrac{-4}{-2}\right)^2 + \left(\dfrac{10}{-2}\right)^2 + 7}$

x^2
$= C$

x^2
$= C$

Mr. Kably

23

1

$$(x-1)^2 + (y-3)^2 = 16$$

The equation above forms a circle when graphed in the xy-plane. What is the radius of the circle?

$$\sqrt{16} = 4$$

2

In the xy-plane, a circle has center (0, 0) and radius 2. Which of the following is an equation of this circle?

A) $2x^2 + y^2 = 0$
B) $x^2 + y^2 = 4$
C) $(x + 2)^2 + (y + 2)^2 = 0$
D) $(x + 2)^2 + (y + 2)^2 = 4$

$(x-0)^2 + (y-0)^2 = 2^2$

$x^2 + y^2 = 4$

3

$$x^2 + 20x + y^2 + 16y = -20$$

The equation above defines a circle in the xy-plane. What are the coordinates of the center of the circle?

A) $(-20, -16)$
B) $(-10, -8)$
C) $(10, 8)$
D) $(20, 16)$

$x^2 \quad = -20$

$\left(\dfrac{20}{-2}, \dfrac{16}{-2}\right)$

$(-10,)$

4

What is the radius of the circle in the xy-plane with equation $x^2 + y^2 = 25$?

$$\sqrt{25} = 5$$

5

Which of the following is an equation of a circle in the xy-plane with center (3, −1) and a radius of 4?

A) $(x - 3)^2 + (y + 1)^2 = 4$
B) $(x - 3)^2 + (y + 1)^2 = 16$
C) $(x + 1)^2 + (y - 3)^2 = 4$
D) $(x + 3)^2 + (y - 1)^2 = 16$

$= 4^2$
$= 16$

6

In the xy-plane, the graph of

$$2x^2 - 6x + 2y^2 + 2y = 45$$ is a circle. What is the radius of the circle?

$\dfrac{2}{2} \quad \dfrac{6x}{2} \quad \dfrac{2}{2} \quad \dfrac{2y}{2} = \dfrac{45}{2}$

A) 5
B) 6.5
C) $\sqrt{40}$
D) $\sqrt{50}$

$x^2 - 3x + y^2 + 1y = 22.5$

$r = \sqrt{\left(\dfrac{-3}{2}\right)^2 + \left(\dfrac{1}{2}\right)^2 + 22.5}$

$\dfrac{0}{2} = C$

7

In the xy-plane, what is the x-coordinate of the center of the circle with equation

$x^2 - 6x + y^2 + 2y = -1$?

$\frac{-6}{-2} = 3$

9

The graph of $x^2 - 4x + y^2 + 6y - 24 = 0$ in the xy-plane is a circle. What is the radius of the circle?

A) $2\sqrt{6}$

B) $\sqrt{11}$

C) $\sqrt{37}$

D) $\sqrt{76}$

$x^2 - 4x + y^2 + 6y = 24$

$r = \sqrt{\left(\frac{-4}{-2}\right)^2 + \left(\frac{6}{-2}\right)^2 + 24}$

8

$x^2 + y^2 + 2x - 8y = 8$

The equation of a circle in the xy-plane is shown above. What is the radius of the circle?

$r = \sqrt{\left(\frac{2}{-2}\right)^2 + \left(\frac{-8}{-2}\right)^2 + 8}$

$= 5$

ELKABLY TEAM

MATH = √ KNOWLEDGE

Math is Root of Knowledge