

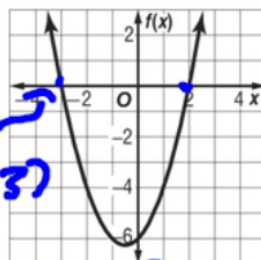
Chapter 4 Practice Test

SCORE _____

1. Identify the y -intercept and the axis of symmetry for the graph of

$$f(x) = -5x^2 + 10x + 4.$$

$$x = \frac{-b}{2a} = \frac{-10}{2(-5)} = \frac{-10}{-10} = 1$$



$$\frac{y\text{-int}}{f(0) = 0 + 0 + 4} \quad \text{axis } x=1 \quad \left. \begin{array}{l} (0, 4) \\ y\text{-int.} \end{array} \right\}$$

2. Identify the quadratic function graphed at the right.

$$(x+3)(x-2) = x^2 + 3x - 2x - 6 = x^2 + x - 6$$

$$f(x) = x^2 + x - 6$$

3. Determine whether $f(x) = -3x^2 + 6x + 1$ has a maximum or a minimum value and find that value.

∩

$$x = \frac{-b}{2a} = \frac{-6}{2(-3)} = \frac{-6}{-6} = 1$$

3. Max: 4

$$f(1) = -3 + 6 + 1 = 4$$

6. Write a quadratic equation with -6 and $\frac{3}{2}$ as its roots. Write the equation in the

4. Solve $-x^2 = 4x$. If exact roots cannot be found, state the consecutive integers between which the roots are located.

$$-x^2 = 4x \rightarrow 0 = x^2 + 4x$$

5. Solve $5x^2 + 13x = 6$ by factoring.

$$0 = x(x+4)$$
$$5x^2 + 13x - 6 = 0 \quad (5x - 2)(x + 3) = 0$$

6. Write a quadratic equation with -6 and $\frac{3}{4}$ as its roots. Write the equation in the form $ax^2 + bx + c = 0$, where a , b , and c are integers.

$$4(x+6)(x-\frac{3}{4}) = 0$$
$$(x+6)(4x-3) = 0$$
$$4x^2 - 3x + 24x - 18 = 0$$
$$4x^2 + 21x - 18 = 0$$
$$5x - 2 = 0$$
$$\frac{+2}{+2} \quad \frac{+2}{+2}$$
$$\frac{5x}{5} = \frac{2}{5}$$

4. $x = 0, -4$

5. $x = -3, \frac{2}{5}$

6. $4x^2 + 21x - 18 = 0$

7. Simplify $(7 + 9i) - (-4 + 12i)$.

$$7 + 9i + 4 - 12i$$

$i^2 = -1$

8. Simplify $\frac{2i}{3+4i}$.

$$\frac{2i}{3+4i} \cdot \frac{(3-4i)}{(3-4i)} = \frac{6i - 8i^2}{9 - 16i^2}$$
$$= \frac{6i + 8}{9 + 16}$$

9. To solve $9x^2 - 30x + 25 = 49$ by using the Square Root Property, you would first rewrite the equation as _____.

$$(3x - 5)(3x - 5) = 49$$

10. Find the value of c that makes $x^2 - 11x + c$ a perfect square trinomial.

$$\left(-\frac{11}{2}\right)^2$$

7. $\frac{11 - 3i}{25}$

8. $\frac{6i}{25} + \frac{8}{25}$

9. $(3x + 5)^2 = 49$

10. $\frac{121}{4}$

17. Write $y = x^2 - 6x + 8$ in vertex form.

$$y = (x^2 - 6x + 9) + 8 - 9 \quad \left. \begin{array}{l} h \\ k \end{array} \right\} y = (x - 3)^2 - 1$$

18. Write an equation for the parabola with vertex at $(2, -1)$ and y -intercept 5.

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

h k

$(0, 5)$
 x y

$$5 = a(0 - 2)^2 - 1$$

$$= a(-2)^2 - 1$$

$$= 4a - 1$$

$$\begin{array}{r} 5 \\ \hline 4a - 1 \\ \hline 5 \end{array} = \frac{4a}{5} \quad a = \frac{3}{4}$$

17. $y = (x - 3)^2 - 1$

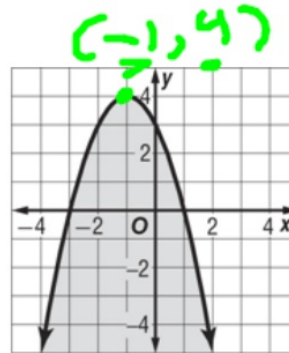
18. $y = \frac{3}{4}(x - 2)^2 - 1$

18. Write an equation for the parabola with vertex at $(2, -1)$ and y -intercept 5.

18. _____

19. Which quadratic inequality is graphed at the right?

- A $y \geq (x + 1)^2 + 4$
- B $y \leq -(x + 1)^2 + 4$
- C $y \leq -(x - 1)^2 + 4$
- D $y \leq -(x - 1)^2 - 4$



19. **B**

20. Solve $2x^2 - 5x - 3 \geq 0$ algebraically.

20. _____

Handwritten work for problem 20:

$(2x + 1)(x - 3) \geq 0$

$x = -\frac{1}{2}$ $x = 3$

Test! $x = -3$ $x = 0$ $x = 4$

Sign chart showing intervals: $(-\infty, -\frac{1}{2})$ (+), $(-\frac{1}{2}, 3)$ (-), $(3, \infty)$ (+)

Final answer: $(-\infty, -\frac{1}{2}] \cup [3, \infty)$

B