Algebra 1 – Module 11 – Test PRACTICE 2024

Name: _____

Class Period: _____

SHOW ALL OF YOUR WORK in the space provided. Take the time to check your work. Circle your final answers. Write neatly.

1. **Graph the following function on the given coordinate plane. Show all of your work as stated.**

$f(x) = x^2 - 2x - 8$

$a = 1$, $b = -2$, $c = -8$

a. **Find the axis of symmetry.**

$x = \frac{-b}{2a} = \frac{2}{2} = 1$

$x = 1$

b. **Find the vertex.**

$f(1) = (1)^2 - 2(1) - 8$

$1 - 2 - 8 = -9$

$(1, -9)$

c. **Find the y-intercept.**

$(0, -8)$

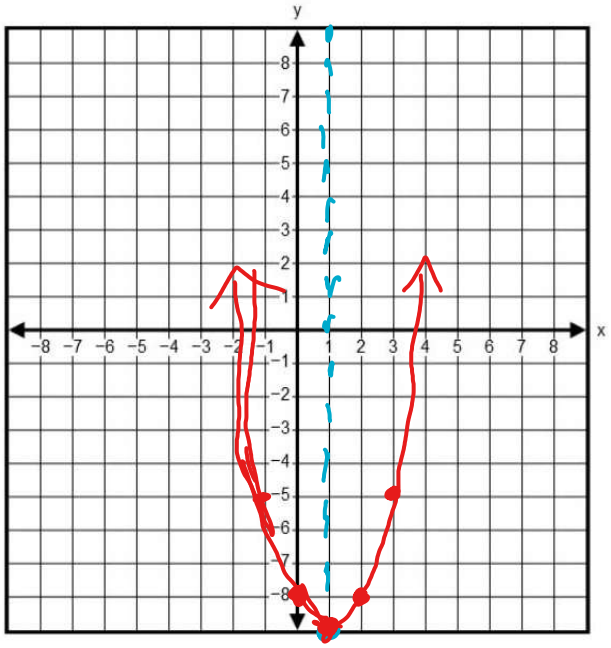
d. **Find another point.**

$f(-1) = (-1)^2 - 2(-1) - 8$

$1 + 2 - 8 = -5$

$(-1, -5)$

e. **Graph the function.**



2. $-5c^2 = -80$

$\frac{-5c^2}{-5} = \frac{-80}{-5}$

$\sqrt{c^2} = \sqrt{16}$

$c = \pm 4$

3. $b^2 + 6b - 79 = -7$

$+79 \quad +79$

$b^2 + 6b + 9 = 72 + 9$

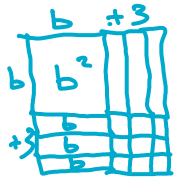
$\sqrt{(b+3)^2} = \sqrt{81}$

$b + 3 = \pm 9$

$-3 \quad -3$

$b = -3 \pm 9$

$\left(\frac{b}{2}\right)^2 = 9$



$-3 + 9 = 6$

or

$-3 - 9 = -12$

4. $a^2 - 7a = -8a + 2$

$+8a - 2 \quad +8a - 2$

$1a^2 + 1a - 2 = 0$

$a = 1$, $b = 1$, $c = -2$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{-1 \pm \sqrt{1 + 8}}{2} = \frac{-1 \pm \sqrt{9}}{2} = \frac{-1 \pm 3}{2}$

$\frac{2}{2} = 1$ or $\frac{-4}{2} = -2$

5. $2x^2 + 9x - 5 = 0$

$(2x^2 + 10x)(-1x - 5) = 0$

$2x(x + 5) - 1(x + 5) = 0$

$(2x - 1)(x + 5) = 0$

$a \cdot c$: -10, 10, -1, 9, b

$2x - 1 = 0$ or $x + 5 = 0$

$+1 \quad +1 \qquad -5 \quad -5$

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

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

$x = -5$

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6. One number is 3 more than another number. The product of the two numbers is 54. What are the numbers?

Let x = 1st #

Let $x+3$ = 2nd #

$x(x+3) = 54$

$x^2 + 3x = 54$

$-54 \quad -54$

$x^2 + 3x - 54 = 0$

$(x+9)(x-6) = 0$

-54: 9 and -6; 3

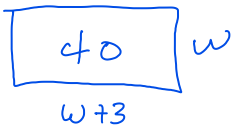
$x+9=0$ or $x-6=0$

$-9 \quad -9$ $+6 \quad +6$

$x = -9$ $x = 6$

$x+3 = -6$ (9)

7. The length of a rectangle is 3 more than the width. If the area is 40 square inches, what are the dimensions?



Let w = width

$w+3$ = length

$A = l\,w$

$40 = (w+3)w$

$w^2 + 3w = 40$

$-40 \quad -40$

$w^2 + 3w - 40 = 0$

$(x+8)(x-5) = 0$

-40: 8 and -5; 3

$x+8=0$ or $x-5=0$

$-8 \quad -8$ $+5 \quad +5$

$x = -8$ $x = 5$

width = 5 in

length = 8 in

8. A ball is launched from a platform. The function $h(t) = -16t^2 + 48t + 64$ represents the ball's height (h) in feet, at time (t) in seconds after launch.

a) What is the height of the platform?

64 ft

b) How long does it take for the ball to reach its maximum height?

$= \frac{-b}{2a} = \frac{-48}{-32} =$ 1.5 sec

c) What was the maximum height of the ball as it moves through the air?

$h(1.5) = -16(1.5)^2 + 48(1.5) + 64$

$h = 100$ ft

d) How long does it take for the ball to hit the ground?

$\frac{0}{-16} = \frac{-16t^2 + 48t + 64}{-16}$

$0 = t^2 - 3t - 4$

-4: -4 and 1; -3

$0 = (t-4)(t+1)$

$t-4=0$ or $t+1=0$

$t = 4$ $-1 \quad -1$

$t = -1$

BONUS: Graph the flight of the ball over time.