

= Practice Quiz 2.1 =

Key

1. Factor completely $y^{12} - 16x^4$

$$\underbrace{(y^6 - 4x^2)}_{(y^3 + 2x)(y^3 - 2x)} (y^6 + 4x^2)$$

2. Solve $\frac{2x^2}{2} + \frac{16x}{2} + \frac{56}{2} = \frac{0}{2}$ by completing the square and express the result in simplest $a + bi$ form.

$$x^2 + 8x + 28 = -28 + 56$$
$$\sqrt{(x+4)^2} = \pm \sqrt{-12}$$
$$x+4 = \pm 2i\sqrt{3}$$

$x = -4 \pm 2i\sqrt{3}$

3. Factor completely: $(10x^4 - 8x^3) + (10x^2 - 8x)$

$$2x^3(5x-4) + 2x(5x-4)$$
$$\underbrace{(2x^3 + 2x)}_{2x(x^2 + 1)} (5x-4)$$

4. Convert the following quadratic into vertex form: $y = x^2 + 2x - 1$

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

Vertex:
 $(-1, -2)$

5. Factor $x^4 - 4x^2 - 12$

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

6. Write an equation of a parabola with a focus at (1, -2) and directrix at $y = 4$.

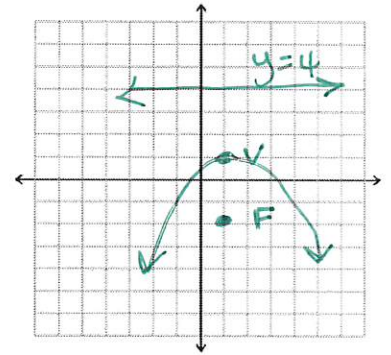
$$V(1, 1)$$

$$p = 3$$

$$a \ominus$$

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

$$y = -\frac{1}{12}(x-1)^2 + 1$$

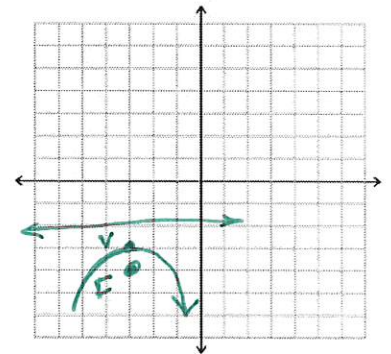


7. Write an equation of a parabola with focus at (-3, -4) and vertex at (-3, -3).

$$p = 1$$

$$a \ominus$$

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



What is the equation of the directrix?

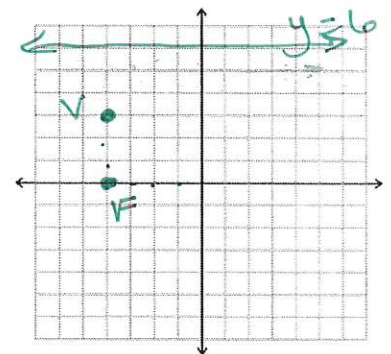
$$y = -2$$

8. Write an equation of a parabola with a vertex (-4, 3) and directrix at $y = 6$.

$$p = 3$$

$$a \ominus$$

$$y = -\frac{1}{12}(x+4)^2 - 3$$



What are the coordinates of the focus?

$$(-4, 0)$$

9. Write your equation from question 8 in standard form.

$$y = -\frac{1}{12}(x+4)(x+4) - 3$$

$$y = -\frac{1}{12}(x^2 + 8x + 16) - 3$$

$$y = -\frac{1}{12}x^2 - \frac{2}{3}x - \frac{4}{3} - 3$$

$$y = -\frac{1}{12}x^2 - \frac{2}{3}x - \frac{13}{3}$$

Double-Sided!!!