= *Practice Quiz 2.1* =

Key

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

$(y^6 - 4x^2)(y^6 + 4x^2)$

$(y^3 + 2x)(y^3 - 2x)(y^6 + 4x^2)$

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.

$x^2 + 8x + 28 = 0$

$x^2 + 8x + 16 = -28 + 16$

$\sqrt{(x+4)^2} = \pm\sqrt{-12}$

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

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

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

$2x^3(5x - 4) + 2x(5x - 4)$

$(5x - 4)(2x^3 + 2x)$

$(5x - 4)(2x)(x^2 + 1)$

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

$a = 1$

Vertex $(-1, -2)$ (from calc.)

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

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

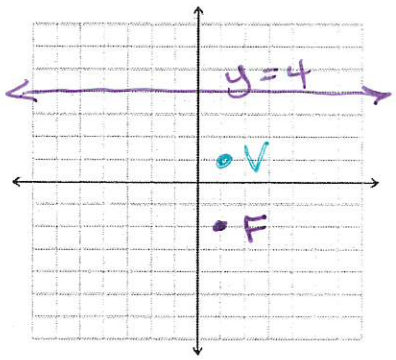
$(x^2 - 6)(x^2 + 2)$

Double-Sided!!!

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

V(1, 1)
a (−)
p = 3

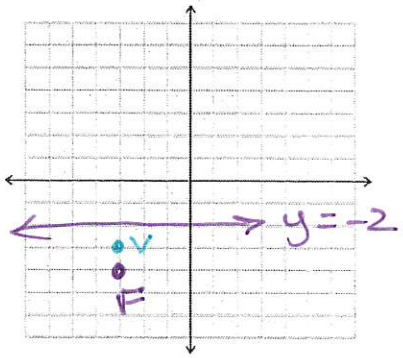
$y = \frac{-1}{12}(x-1)^2 + 1$



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

p = 1
a (−)
V(-3, -3)

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



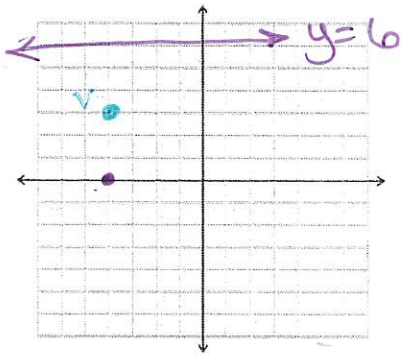
What is the equation of the directrix?

y = -2

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

p = 3
a (−)
V(-4, 3)

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



What are the coordinates of the focus?

(-4, 0)

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

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

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

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

$y = \frac{-1}{12}x^2 - \frac{2}{3}x + \frac{5}{3}$

Double-Sided!!!