

Write the Equation Given the Roots ($a \neq 1$)---Practice

Key

1. Roots of -4 and 6, with vertex at (1,5)

$$(x+4)(x-6)$$

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

$$y = a(x^2 - 2x - 24)$$

$$5 = a(-25)$$

$$a = -\frac{1}{5}$$

$$y = -\frac{1}{5}(x^2 - 2x - 24)$$

2. Roots of 1 and 2, with y-intercept of -4 Write your answer in standard form.

$$(x-1)(x-2)$$

$$x^2 - 2x - 1x + 2$$

$$y = a(x^2 - 3x + 2)$$

$$-4 = a(2)$$

$$a = -2$$

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

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

3. Roots of -1 and -6 that passes through (2, -6)

$$(x+1)(x+6)$$

$$x^2 + 6x + 1x + 6$$

$$y = a(x^2 + 7x + 6)$$

$$-6 = a(24)$$

$$a = -\frac{1}{4}$$

$$y = -\frac{1}{4}(x^2 + 7x + 6)$$

4. Double root of 4 with y-intercept of 24 Write your answer in standard form.

$$(x-4)(x-4)$$

$$x^2 - 4x - 4x + 16$$

$$y = a(x^2 - 8x + 16)$$

$$24 = a(16)$$

$$a = \frac{3}{2}$$

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

$$y = \frac{3}{2}x^2 - 12x + 24$$

Unit 1 (4.4)

5. Roots of -2 and 8 with vertex at (3,4)

$$(x+2)(x-8)$$

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

$$y = a(x^2 - 6x - 16)$$

$$4 = a(-25)$$

$$a = -\frac{4}{25}$$

$$y = -\frac{4}{25}(x^2 - 6x - 16)$$

6. Roots of 3 and -2, with y-intercept of -5

$$(x-3)(x+2)$$

$$x^2 + 2x - 3x - 6$$

$$y = a(x^2 - 1x - 6)$$

$$-5 = a(-6)$$

$$a = \frac{5}{6}$$

$$y = \frac{5}{6}(x^2 - 1x - 6)$$

7. Root of $2i$ with y-intercept of -3 Write your answer in standard form.

$$x = 2i$$

$$x^2 = 4i^2$$

$$x^2 = -4$$

$$(x^2 + 4)$$

$$y = a(x^2 + 4)$$

$$-3 = a(4)$$

$$a = -\frac{3}{4}$$

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

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

8. Root of $4 - 3i$ that passes through $(-3,4)$

$$x - 4 = -3i$$

$$(x-4)(x-4) = 9i^2$$

$$x^2 - 4x - 4x + 16 = -9$$

$$y = a(x^2 - 8x + 25)$$

$$4 = a(58)$$

$$a = \frac{2}{29}$$

$$y = \frac{2}{29}(x^2 - 8x + 25)$$