

## End of Unit Quiz

Date \_\_\_\_\_ Period \_\_\_\_\_

**Factor each COMPLETELY and find all roots. One factor may be given.**

1)  $f(x) = 5x^5 - 25x^4 - 24x^3 + 120x^2 - 36x + 180$ ;  $x - 5$

2)  $f(x) = 16x^9 + 80x^8 - 17x^5 - 85x^4 + x + 5$ ;  $x + 5$

3)  $f(x) = x^6 - 64$

4)  $f(x) = x^8 - 10x^4 + 9$

5)  $f(x) = x^8 - 2x^4 + 1$

6)  $f(x) = x^6 + 28x^3 + 27$

Write a polynomial equation with the following zeros.

7) 0, 4, 6, -2

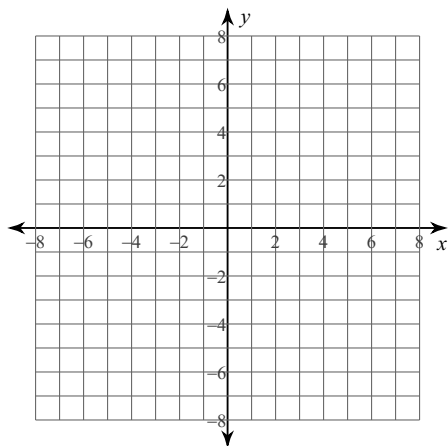
8) -4, -3 multiplicity of 2

1, -1, 5 multiplicity of 2

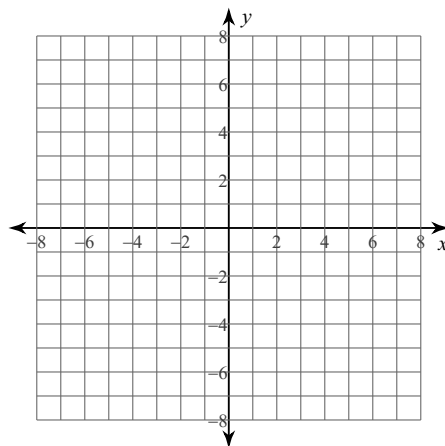
0, -4, -3

Sketch the graph of each function.

9)  $f(x) = 2x^2 + 4x + 2$



10)  $f(x) = -x^4 + x^3 + 3x^2$



## Answers to End of Unit Quiz (ID: 1)

1) Factors to:  $f(x) = (5x^2 + 6)(x^2 - 6)(x - 5)$

Rational zeros:  $\{5\}$

2) Factors to:  $f(x) = (x - 1)(x + 1)(x^2 + 1)(2x - 1)(2x + 1)(4x^2 + 1)(x + 5)$

Rational zeros:  $\left\{1, -1, \frac{1}{2}, -\frac{1}{2}, -5\right\}$

3)  $f(x) = (x - 2)(x^2 + 2x + 4)(x + 2)(x^2 - 2x + 4)$

4)  $f(x) = (x^2 - 3)(x^2 + 3)(x - 1)(x + 1)(x^2 + 1)$

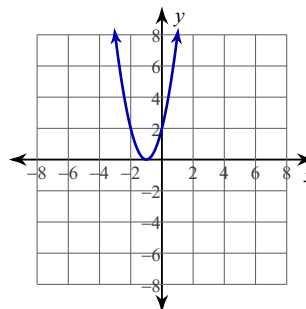
5)  $f(x) = (x - 1)^2 \cdot (x + 1)^2 \cdot (x^2 + 1)^2$

6)  $f(x) = (x + 1)(x^2 - x + 1)(x + 3)(x^2 - 3x + 9)$

7)  $-1 + 3i$

8)  $-3 - 2\sqrt{2}$

9)



10)

