Pre-Calculus

Unit 2 Quiz (practice test)

1. Determine the remainder of the following expression.
$(6x^3 + 7x^2 - 47x + 30) \div (3x - 4)$:

a) -9 b) 9 c) 6 d) -6

2. Which of the following is NOT a root of $f(x) = x^3 + x^2 - 14x - 24$?

a) 4 b) -2 c) 2 d) -3

3. Which of the following is NOT a root of $f(x) = x^3 + 8x^2 + x - 42$?

a) 2 b) -7 c) -3 d) 7

4. Simplify the following expression:
$(4 - 2i)(3 + 9i)$

a) $-6 + 30i$ b) $30 + 30i$
c) $30 - 15i$ d) $-6 - 15i$

5. What kind of root(s) are associated with the factor below? $x^2 - 49$

a) rational b) imaginary
c) none d) irrational

6. Which of the following is NOT a root of the given polynomial function?
$f(x) = x^4 + 2x^3 - 25x^2 - 26x + 120$

a) 2 b) -4 c) -3 d) -5

7. What is a vertical asymptote of the following polynomial function?
$$f(x) = \frac{x^2 - 9}{x^2 - 36}$$

a) $y = 3$ b) $x = 3$ c) $x = 6$ d) $y = 6$

8. What is the horizontal asymptote of the following rational function?
$$f(x) = \frac{x^2 - 25}{3x^3 + 7}$$

a) $y = \frac{1}{3}$ b) $y = -\frac{25}{3}$
c) $y = 0$ d) $y = \frac{1}{7}$

9. What is the root of the following rational function?
$$f(x) = \frac{3 - x}{2x + 8}$$

a) $x = -4$ b) $x = -3$ c) $x = 3$ d) $x = 4$

10. Determine the behavior of the given function at the left-most vertical asymptote: $f(x) = \frac{-5}{x^2 - 9x + 20}$

a) negative on both sides
b) positive on both sides
c) positive on left; negative on right
d) negative on left; positive on right