

**MATH1314 College Algebra
Review for Exam 3**

Divide.

1) $\frac{x^4 - 6x^2 + 7x - 6}{x + 3}$

Use synthetic division to divide the first polynomial by the second.

2) $5x^3 + 16x^2 + 8x - 8$ $x + 2$

Use the remainder theorem to find the remainder when $f(x)$ is divided by the given $x - k$.

3) $f(x) = 3x^3 - 2x^2 + 8x + 11$; $x - 2$

Write the complete factored form of the polynomial $f(x)$, given the indicated zero.

4) $f(x) = x^3 - 5x^2 + 7x - 3$
3 is a zero.

Find the zeros of $f(x)$, given that one zero is k .

5) $f(x) = x^3 + 3x^2 + 25x + 75$ $k = -3$

Find any vertical asymptotes.

6) $h(x) = \frac{(x-2)(x+7)}{x^2 - 9}$

Find the horizontal asymptote of the given function.

7) $h(x) = \frac{6x^2 - 4x - 5}{7x^2 - 5x + 7}$

Solve the polynomial inequality.

8) $(x+5)(x+3)(x-3) < 0$

Solve the equation.

9) $3x^{1/4} - 9 = 0$

Find the indicated composite for the pair of functions.

10) Given $f(x) = 4x^2 + 4x + 3$ and $g(x) = 4x - 7$, find $(g \circ f)(x)$.

Find the functions f and g so that $F(x) = (f \circ g)(x)$.

11) $F(x) = \frac{5}{x^2} + 8$

Find a symbolic representation for $f^{-1}(x)$.

12) $f(x) = 6x + 3$

Use the compound interest formula to determine the final value of the given amount.

13) \$1,000 at 7% compounded annually for 12 years

Simplify the expression.

14) $\log_5 \frac{1}{25}$

Solve the equation. Use the change of base formula to approximate an exact answer to the nearest hundredth when appropriate.

15) $10^x = 417$

Solve the equation symbolically.

16) $6 \ln x - 8 = 3$

Answer Key

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1) $x^3 - 3x^2 + 3x - 2$

2) $5x^2 + 6x - 4$

3) 43

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

5) $-3, \pm 5i$

6) $x = 3, x = -3$

7) $y = 6/7$

8) $(-\infty, -5) \cup (-3, 3)$

9) 81

10) $16x^2 + 16x + 5$

11) $f(x) = x + 8, g(x) = 5/x^2$

12) $f^{-1}(x) = \frac{x - 3}{6}$

13) \$2252.19

14) -2

15) $x = \log 417$

16) $x = e^{11/6}$