Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Lance Burger **Course:** Fall 2015 Fresno State Math 75 - Burger **Book:** California State University, Fresno: Math 75/76/77	**Assignment:** LP 1.1-1.2

1. Simplify the difference quotient $\frac{f(x+h)-f(x)}{h}$ for the given function.

$f(x) = 5x - 3$

$\frac{f(x+h)-f(x)}{h} =$ ☐ (Simplify your answer.)

2. Simplify the difference quotient $\frac{f(x+h)-f(x)}{h}$ for the given function.

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

$\frac{f(x+h)-f(x)}{h} =$ ☐ (Simplify your answer.)

3. Simplify the difference quotient $\frac{f(x)-f(a)}{x-a}$ for the given function.

$f(x) = 6 - 3x - x^2$

$\frac{f(x)-f(a)}{x-a} =$ ☐ (Simplify your answer.)

4. Determine whether the graph of the following equation and/or function has symmetry about the x-axis, the y-axis, or the origin. Check your work by graphing.

$f(x) = x^6 + 4x^4 - 13$

Select all that apply.

☐ A. The function is symmetric with respect to the x-axis.

☐ B. The function is symmetric with respect to the origin.

☐ C. The function is symmetric with respect to the y-axis.

☐ D. The function has no symmetry.

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5. Determine whether the graph of the following function has symmetry about the x-axis, the y-axis, or the origin. Check your work by graphing.

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

Select all that apply.

- ☐ A. The function is symmetric with respect to the y-axis.
- ☐ B. The function is symmetric with respect to the x-axis.
- ☐ C. The function is symmetric with respect to the origin.
- ☐ D. The function has no symmetry with respect to the x-axis, y-axis, or origin.

6. Determine whether the graph of the following function has symmetry about the x-axis, the y-axis, or the origin. Check your work by graphing.

$f(x) = 10|x|$

Select all that apply.

- ☐ A. The function is symmetric with respect to the x-axis.
- ☐ B. The function is symmetric with respect to the y-axis.
- ☐ C. The function is symmetric with respect to the origin.
- ☐ D. The function has no symmetry.

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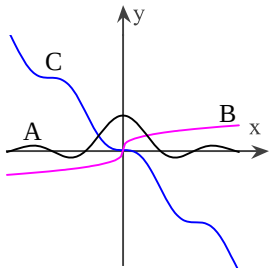
7. State whether the functions represented by graphs A, B, and C shown in the figure to the right are even, odd, or neither.



The function represented by graph A is [even / neither / odd].

The function represented by graph B is [neither / odd / even].

The function represented by graph C is [odd / neither / even].

8. Determine a polynomial f that satisfies the following properties. (Hint: Determine the degree of f. Then substitute a polynomial of that degree and solve for its coefficients.)

$f(f(x)) = 16x - 10$

$f(x) =$ ☐

9. Determine a polynomial f that satisfies the following properties. (Hint: Determine the degree of f. Then substitute a polynomial of that degree and solve for its coefficients.)

$f(f(x)) = x^4 + 4x^2 + 6$

$f(x) =$ ☐

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10. Simplify the difference quotients $\frac{f(x+h)-f(x)}{h}$ and $\frac{f(x)-f(a)}{x-a}$ for the following function by rationalizing the numerator.

$f(x) = 6\sqrt{x}$

$\frac{f(x+h)-f(x)}{h} =$ ☐ (Simplify your answer.)

$\frac{f(x)-f(a)}{x-a} =$ ☐ (Simplify your answer.)

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1. 5

2. $12x + 6h - 5$

3. $-a - x - 3$

4. C

5. D

6. B

7. even
   odd
   odd

8. $4x - 2$

9. $x^2 + 2$

10. $\frac{6}{\sqrt{x+h} + \sqrt{x}}$
    $\frac{6}{\sqrt{x} + \sqrt{a}}$