

Homework Answers

pg 146 – 147

42. $DQ = -2x - h$

44. $DQ = -1/2$

46. $DQ = 10x + 5h + 4$

50. $3x^2 + 3xh + h^2 - 2$

71. $f(g(x)) = |x| \rightarrow D: \{x | x \in \mathbb{R}\}$
 $g(f(x)) = x \rightarrow D: \{x | x \geq -5\}$

96. none

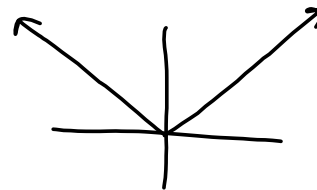
96. none

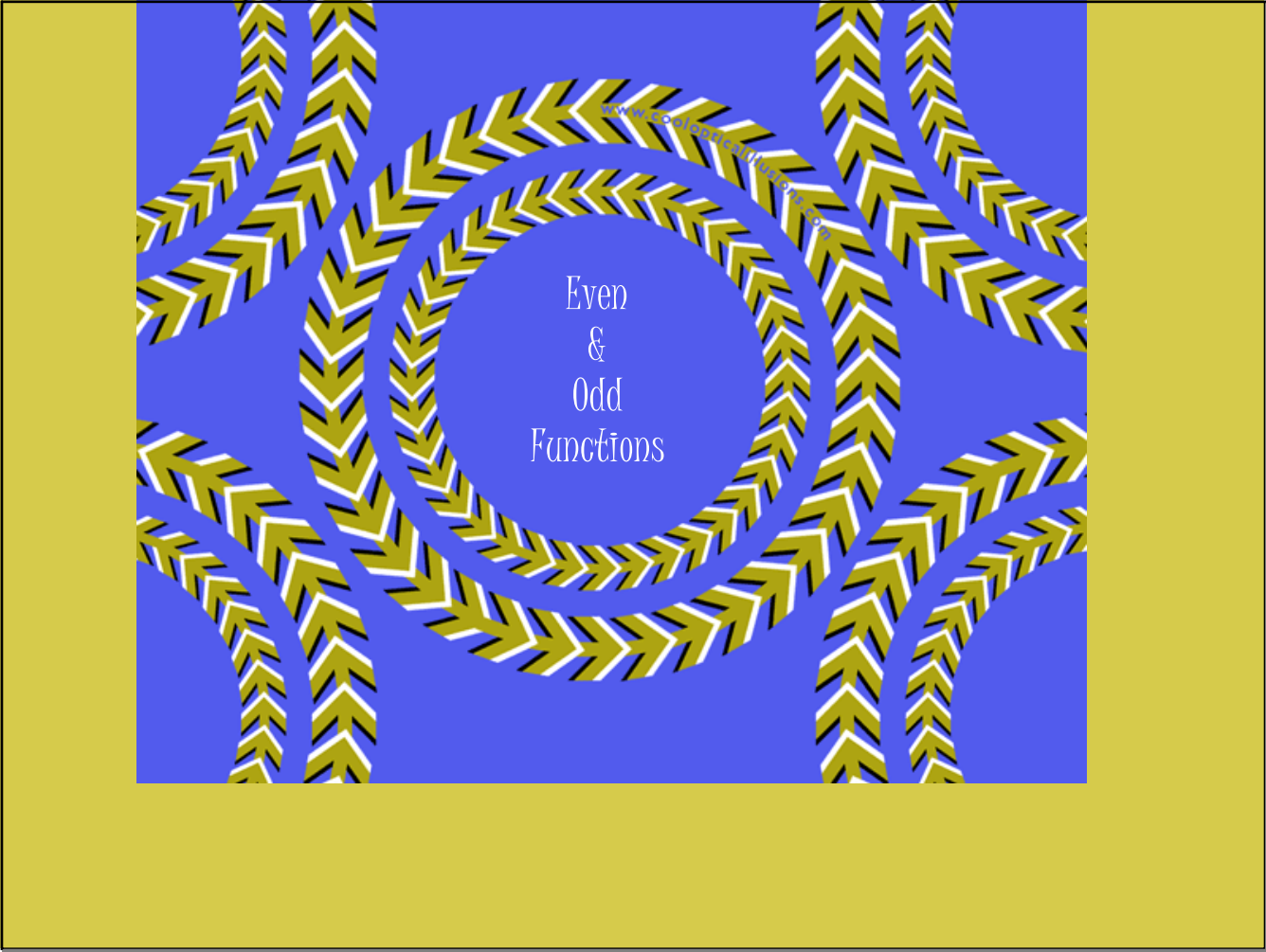
98. $b \rightarrow -5$

100. $c \text{ \& } g \rightarrow 2/3$

102. a & f

$\sqrt{x^2}$





Warm-Up: Find the DQ.

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

$$\begin{aligned} f(x+h) &= 2(x+h)^2 - 3(x+h) \\ &= 2(x^2 + 2xh + h^2) - 3x - 3h \\ &= 2x^2 + 4xh + 2h^2 - 3x - 3h \end{aligned}$$

DQ: $\cancel{2x^2} + 4xh + 2h^2 - \cancel{3x} - 3h - \cancel{2x^2} + \cancel{3x}$

DQ: $\cancel{4xh} + 2h^2 - \cancel{3h}$

DQ: $4x + 2h - 3$

$$\frac{1x^3 + 3x^2h + 3xh^2 + 1h^3}{1}$$

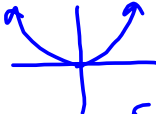
2. $F(x) = 6x^3 - 2x$

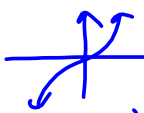
$$\begin{aligned} F(x+h) &= 6(x+h)^3 - 2(x+h) \\ &= 6(x^3 + 3x^2h + 3xh^2 + h^3) - 2x - 2h \\ &= 6x^3 + 18x^2h + 18xh^2 + 6h^3 - 2x - 2h \end{aligned}$$

DQ: $\cancel{6x^3} + 18x^2h + 18xh^2 + 6h^3 - \cancel{2x} - 2h - \cancel{6x^3} + \cancel{2x}$

DQ: $18x^2h + 18xh^2 + 6h^3 - 2h$

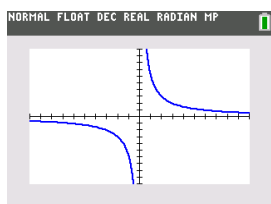
DQ: $18x^2 + 18xh + 6h^2 - 2$

Even Functions: Graph: same ends  Symmetric w/ respect to the y-axis
 Rule: $y\text{-axis } (x, y) \rightarrow (-x, y)$
 $f(-x) = f(x)$ same function

Odd Functions: Graph: opposite ends  Symmetric w/ respect to the origin.
 Rule: $origin (x, y) \rightarrow (-x, -y)$
 $f(-x) = -f(x)$ opposite function

Determine by definition if the function is even, odd or neither.

1. $f(x) = \frac{6}{x}$



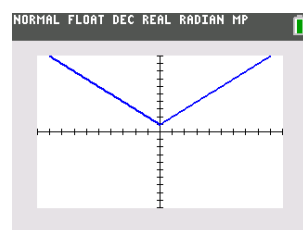
odd

$$f(-x) = \frac{6}{(-x)} = -\frac{6}{x}$$

$$f(-x) = -f(x)$$

$\therefore$ odd

2. $f(x) = |x| + 1$



even

$$f(-x) = |-x| + 1$$

$$= |x| + 1$$

$$f(-x) = f(x)$$

$\therefore$ even

3. $6x + 5y = 0$

$$\underline{-6x} \quad \underline{-6x}$$

$$\frac{5y}{5} = \frac{-6x}{5}$$

$$y = -\frac{6}{5}x$$

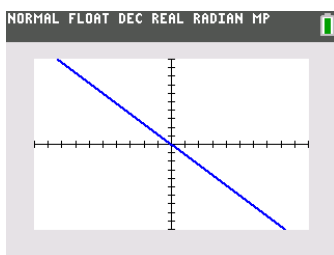
$$f(-x) = -\frac{6}{5}(-x)$$

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

$$f(-x) = -f(x)$$

$\therefore$ odd

odd



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

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

$$= -x^3 + 2x$$

$$f(-x) = -f(x)$$

$\therefore$ odd

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

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

$$= x^2 - 3x - 1$$

$$f(-x) \neq f(x) \neq -f(x)$$

$\therefore$ neither

6. $f(x) = x^4 - 7x^2$

$$f(-x) = (-x)^4 - 7(-x)^2$$

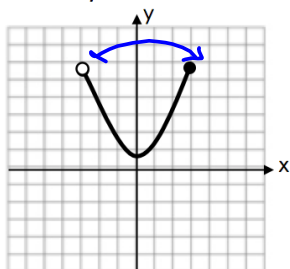
$$= x^4 - 7x^2$$

$$f(-x) = f(x)$$

$\therefore$ even

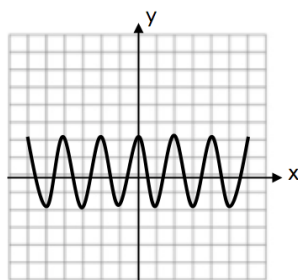
Determine visually whether the function is even, odd or neither.

7.



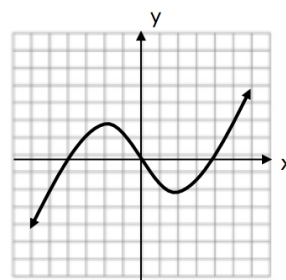
neither

8.



even

9.



odd

HW# 1 - 13

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33-42, 45, 46

Ch1 Ditto 2: 9&10

