

Date: \_\_\_\_\_

Name: \_\_\_\_\_

## PRACTICE Absolute Max & Min

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Find the ABSOLUTE Max and Min values, when they occur, and range

1.  $f(x) = (x - 2)^2 - 11$   
on  $x \in (-2, 6)$

2.  $g(x) = -5\sqrt{8+4x} - 9$   
on  $x \in [-2, 14)$

3.  $h(x) = -2 \cos \frac{\pi}{4}(x - 1) + 3$   
on  $x \in [1, 7]$

4.  $f(x) = 3 - 9x$  on  $x \in (-1, 16]$       5.  $g(x) = -3x^2 + 6x$  on  $x \in (-5, 2]$       6.  $g(x) = -(3.5)^{2x}$  on  $x \in [0, 2)$

## ANSWERS

## PRACTICE Absolute Max &amp; Min

Find the ABSOLUTE Max and Min values, when they occur, and range

1.  $f(x) = (x-2)^2 - 11$   
on  $x \in (-2, 6)$

t.p at  $x=2$ 

$f(-2) = 5$

$f(6) = 5$

$f(t.p) = f(2) = -11$

no abs. MAX value

abs. MIN value is  $y = -11$   
when  $x = 2$ Range is  $y \in [-11, 5]$ 

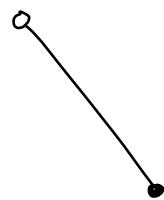
4.  $f(x) = 3 - 9x$  on  $x \in (-1, 16]$

no t.p.

$f(-1) = 12$

$f(16) = -141$

no abs. MAX

abs. MIN is  $y = -141$   
when  $x = 16$ ∴ Range is  $y \in [-141, 12]$ 

2.  $g(x) = -5\sqrt{8+4x} - 9$   
on  $x \in [-2, 14]$

no t.p.

$g(-2) = -9$

$g(14) = -49$

 $\therefore$  abs. MAX value  $y = -9$   
at  $x = -2$ 

no abs. MIN value

 $\therefore$  Range  $y \in (-49, -9]$ 

5.  $g(x) = -3x^2 + 6x$  on  $x \in (-5, 2]$

$= -3x(x-2)$

t.p at  $x=1$ 

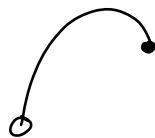
$g(-5) = -105$

$g(2) = 0$

$g(1) = 3$

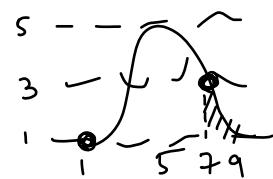
abs. MAX is  $y = 3$   
at  $x = 1$ 

no abs. MIN

 $\therefore$  Range  $y \in (-105, 3]$ 

3.  $h(x) = -2 \cos \frac{\pi}{4}(x-1) + 3$   
on  $x \in [1, 7]$

$\rho = \frac{2\pi}{k} = \frac{2\pi}{\frac{\pi}{4}} = 8$

t.p at  $x = 1, 4.5$ 

$h(1) = 1$

$h(7) = 3$

$h(5) = 5$

 $\therefore$  abs. MAX value  $y = 5$   
at  $x = 5$ abs. MIN value  $y = 1$   
at  $x = 1$  $\therefore$  Range  $y \in [1, 5]$ 

6.  $g(x) = -(3.5)^{2x}$  on  $x \in [0, 2)$

no t.p.

$g(0) = -1$

$g(2) = -150.0625$

no abs. MIN

abs. MAX is  $y = -1$   
at  $x = 0$  $\therefore$  Range  $y \in$ 

$(-150.0625, -1]$