

Date: _____

Name: _____

PRACTICE Absolute Max & Min

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

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

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 & 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 $x=2$

$f(-2) = 5$

$f(6) = 5$

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

abs. MAX value is $y=5$ } approach
when $x = -2$ and $x=6$ } the value
never actually
reach it.abs. MIN value is $y=-11$
when $x=2$

\therefore Range is $y \in [-11, 5)$

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

no t.p.

$g(-2) = -9$

$g(14) = -49$

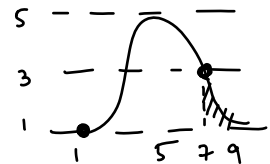
 \therefore abs. MAX value $y = -9$
at $x = -2$ abs. MIN value approached
is $y = -49$ at $x = 14$

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

3. $h(x) = -2 \cos \frac{\pi}{4}(x-1) + 3$

on $x \in [1, 7]$

$p = \frac{2\pi}{k} = \frac{2\pi}{\pi/4} = 8$

t.p. at $x=1, 4.5$ 

$h(1) = 1$

$h(7) = 3$

$h(4.5) = 5$

 \therefore abs. MAX value $y = 5$
at $x = 4.5$ abs. MIN value $y = 1$
at $x = 1$

\therefore Range $y \in [1, 5]$

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

no t.p.

$f(-1) = 12$

$f(16) = -141$

abs. MAX approached
is $y = 12$ when $x = -1$ abs. MIN is $y = -141$
when $x = 16$

\therefore Range is $y \in [-141, 12)$

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 $x = 1$ abs. MIN approached
is $y = -105$
when $x = -5$

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

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

no t.p.

$g(0) = -1$

$g(2) = -150.0625$

abs. MAX approached is
 $y = -150.0625$
at $x = 2$ abs. MIN is $y = -1$
at $x = 0$

\therefore Range $y \in$
 $(-150.0625, -1]$