

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 $x=2$

$f(-2) = 5$

$f(6) = 5$

$f(\text{t.p.}) = f(2) = -11$

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 $x=14$

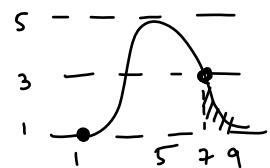
\therefore Range $y \in (-49, -9]$

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

on $x \in [1, 7]$

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

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 $y \in [-1, 150.0625)$