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 $x \in [0, 2)$

Date:_____ Name: _____

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 ∈ (−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 $y\in[-11,5)$

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

no t.p.

$g(-2)=-9$

$g(14)=-49$

∴ abs MAX value $y=-9$ at $x=-2$

no abs. MIN value

∴ Range $y\in(-49,-9]$

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

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

t.p at $x=1, 4.5$

$h(1)=1$

$h(7)=3$

$h(5)=5$

∴ abs. MAX value $y=5$ at $x=5$

abs. MIN value $y=1$ at $x=1$

∴ Range $y\in[1,5]$

4. $f(x)=3-9x$ on x ∈ (−1, 16]

no t.p.

$f(-1)=12$

$f(16)=-141$

no abs. MAX

abs. MIN is $y=-141$ when $x=16$

∴ Range is $y\in[-141,12)$

5. $g(x)=-3x^2+6x$ on x ∈ (−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

∴ Range $y\in(-105,3]$

6. $g(x)=-(3.5)^{2x}$ on x ∈ [0, 2)

no t.p.

$g(0)=-1$

$g(2)=-150.0625$

no abs. MIN

abs. MAX is $y=-1$ at $x=0$

∴ Range $y\in(-150.0625,-1]$