What is your absolute full name? Key

AP Calculus AB: 4.8 Absolute Max & Min Values with Intervals

1. Find the absolute min of the function $g(x) = \sqrt[3]{(x^2-16)^2}$ for the interval [-2,5]

x	y
-2	$12^{2/3}$
5	$9^{2/3}$
0	$12^{2/3}$
4	0

$g'(x) = \frac{4x}{3\sqrt[3]{x^2-16}}$

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$x = 0$ & ± 4 ← ignore -4 (not in interval)

absolute min @ $x=4$
value $y=0$

2. Using the function $h(x) = \frac{x^2+4}{2x}$, find

a) the interval(s) the function $h(x)$ is decreasing.

dec: [-2,0] [0,2] or [-2,2]

b) Find the absolute maximum value from the interval [1,3]

ignore 0 & -2 b/c not in interval

x	y
1	2.5
3	2.1
2	2

absolute max @ $x=1$
value $y=2.5$

3. Find the absolute maximum value for the function $f(x) = \sin(x) - \frac{x}{2}$ for the interval $[0,\pi]$

x	y
0	0
π	$-\pi/2$
$\pi/3$	.342

$f' = \cos(x) - \frac{1}{2}$

$\cos(x) = \frac{1}{2}$

$x = \frac{\pi}{3}$

$\sin(0) - \frac{0}{2} = 0$

$\sin(\pi) - \frac{\pi}{2} = -\pi/2$

$\sin(\pi/3) - \frac{\pi/3}{2} = \frac{3\sqrt{3}}{6} - \frac{\pi}{6} = \frac{3\sqrt{3}-\pi}{6}$

absolute max @ $x=\pi/3$
value $y=.342$

~~Calculator Allowed~~

4. Find where the function $f(x) = 4x \cdot \ln(x)$ has an absolute max value from [0,3]

x	y
0	und
3	13.183
e^{-1}	-1.472

$f'(x) = 0$

$x = e^{-1}$

absolute max @ $x=3$
value 13.183