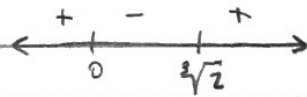


HW #3

1. E, f'' changes sign, so the concavity of f must change.
2. D, $f''(x) = 0$ when $x = 0, 3,$ and 6 but $f''(x)$ does not change sign at $x = 0$.
3. B $f'(x) > 0$ on $-2 \leq x \leq 0$, therefore $f(x)$ is increasing.
4. B f must be negative, decreasing, concave down
5. D $f'(x) = x^2 - \frac{2}{x} = 0 = \frac{x^3 - 2}{x} = 0$

$$f'(x) = 0 \text{ when } x = \sqrt[3]{2}$$

$$f'(x) \text{ DNE when } x = 0$$



$f'(x) > 0$ on $(0, \sqrt[3]{2})$ so $f(x)$ must be decreasing

6. B because $f'(x) > 0$
7. B $f'(x) > 0$ on this interval
8. E $f'(x)$ changes from increasing to decreasing 5 times so $f''(x)$ would change from pos. to neg. 5 times
9. C $\frac{dr}{dt} = 2$ $SA = 4\pi r^2$ $\frac{dA}{dt}$
 $r = 3$ $\frac{dA}{dt} = 8\pi r \frac{dr}{dt}$
 $8\pi(3)(2) = 48\pi$
10. C $f'(x)$ changes from pos. to neg. at $x = 4$.