

**Mini-math Div 3/4: Monday, October 5, 2020 (6 minutes)**

Find the derivatives of the following:

(1)  $f(x) = x^{1/3}$

**Solution:**  $f'(x) = x^{-2/3}/3$

(2)  $f(x) = \pi^2$

**Solution:**  $f'(x) = 0$

(3)  $f(x) = 2x^3 - 5x + 3$

**Solution:**  $f'(x) = 6x^2 - 5$

(4)  $f(x) = (x + 1)^6(x - 2)^5$

**Solution:**  $f'(x) = 6(x + 1)^5(x - 2)^5 + 5(x - 2)^4(x + 1)^6$

(5)  $f(x) = \frac{3x^2 + 1}{x}$

**Solution:**  $f(x) = 3x + 1/x$  so  $f'(x) = 3 - 1/x^2$

(6)  $f(x) = \sqrt{x^2 + 1}$

**Solution:**  $f'(x) = (1/2)(x^2 + 1)^{-1/2}(2x) = \frac{x}{\sqrt{x^2 + 1}}$