

UNIT #1

LIMITS & DERIVATIVES

L1 (1.1) Rationalizing - see page 6

Ex1: Rationalize the denominator.

$$\begin{aligned} \text{a) } \frac{4}{2\sqrt{3}} &= \frac{2}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\ &= \frac{2\sqrt{3}}{3} \end{aligned}$$

$$\begin{aligned} \text{b) } \frac{4}{\sqrt{3} + \sqrt{5}} &= \frac{4}{\sqrt{3} + \sqrt{5}} \times \frac{\sqrt{3} - \sqrt{5}}{\sqrt{3} - \sqrt{5}} \\ &= \frac{4(\sqrt{3} - \sqrt{5})}{(\sqrt{3} + \sqrt{5})(\sqrt{3} - \sqrt{5})} \\ &= \frac{4(\sqrt{3} - \sqrt{5})}{3 - 5} \\ &= \frac{4(\sqrt{3} - \sqrt{5})}{-2} \\ &= -2(\sqrt{3} - \sqrt{5}) \end{aligned}$$

Ex2: Rationalize the numerator.

$$\text{a) } \frac{\sqrt{72} - \sqrt{8}}{10} = \frac{6\sqrt{2} - 2\sqrt{2}}{10}$$

$$= \frac{4\sqrt{2}}{10}$$

$$= \frac{2\sqrt{2}}{5} \times \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \frac{2\sqrt{2}(\sqrt{2})}{5\sqrt{2}}$$

$$= \frac{4}{5\sqrt{2}}$$

$$\text{b) } \frac{\sqrt{x-6} + 5}{x} \cdot \frac{\sqrt{x-6} - 5}{\sqrt{x-6} - 5}$$

$$= \frac{(x-6) - 25}{\sqrt{x-6} - 5}$$

$$= \frac{x-11}{\sqrt{x-6} - 5}$$

Assigned Work:

p.9 #3bdf, 4, 6ef, 7