

# 8 Classwork 8 MAT 1275 Professor Chiu

Name: \_\_\_\_\_

③ Simplify numerator

1. Divide and simplify:

① Rationalize the denominator:

$$(\sqrt{3} - \sqrt{5}) \cdot (\sqrt{3} + \sqrt{5}) = 3 - 5 = -2$$

$$\begin{array}{r} \sqrt{3} - \sqrt{5} \\ + \sqrt{3} + \sqrt{5} \\ \hline \begin{array}{|c|c|} \hline 3 & -\sqrt{15} \\ \hline \sqrt{15} & -5 \\ \hline \end{array} \end{array}$$

② Times  $(\sqrt{3} + \sqrt{5})$  on numerator and denominator:

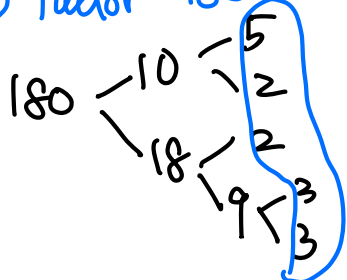
$$\begin{aligned} & \frac{4\sqrt{3} - \sqrt{5}}{\sqrt{3} - \sqrt{5}} \\ &= \frac{(4\sqrt{3} - \sqrt{5})(\sqrt{3} + \sqrt{5})}{(\sqrt{3} - \sqrt{5})(\sqrt{3} + \sqrt{5})} \\ &= \frac{12 - \sqrt{15} + 4\sqrt{15} - 5}{-2} \\ &= \frac{12 - 5 - \sqrt{15} + 4\sqrt{15}}{-2} = \frac{7 + 3\sqrt{15}}{-2} \end{aligned}$$

$$4\sqrt{3} - \sqrt{5}$$

$\sqrt{3}$	$4 \cdot 3$	$-\sqrt{15}$
$\sqrt{5}$	$4 \cdot \sqrt{15}$	$-5$

2. Simplify assuming that each variable is positive:

① factor 180:



$$180 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 2^2 \cdot 3^2 \cdot 5$$

② Cancel "√" with "square"

$$\sqrt{2^2} = 2, \sqrt{3^2} = 3$$

$$\sqrt{x^2} = x, \sqrt{y^2} = y$$

$$x^5 = x^2 \cdot x^2 \cdot x$$

$$y^6 = y^2 \cdot y^2 \cdot y^2$$

$$\begin{aligned} & \sqrt{180x^5y^6} \\ &= \sqrt{2^2 \cdot 3^2 \cdot 5 \cdot x^2 \cdot x^2 \cdot x \cdot y^2 \cdot y^2 \cdot y^2} \\ &= \sqrt{2^2} \cdot \sqrt{3^2} \cdot \sqrt{5} \cdot \sqrt{x^2} \cdot \sqrt{x^2} \cdot \sqrt{x} \cdot \sqrt{y^2} \cdot \sqrt{y^2} \cdot \sqrt{y^2} \\ &= 2 \cdot 3 \cdot \sqrt{5} \cdot x \cdot x \cdot \sqrt{x} \cdot y \cdot y \cdot y \\ &= 2 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot \sqrt{5} \cdot \sqrt{x} \\ &= 6x^2y^3\sqrt{5x} \end{aligned}$$