Math 1071 - Calculus for Business and Economics

Name:

Discussion Section:

Follow the instructions in each problem.

**Show supporting work, not just a final answer, to receive credit on a problem.**

1. (**5 pts**) Simplify $\left(\dfrac{x^3 y^2}{x^4 \sqrt{z}}\right)^3$. Rewrite the expression using postive or negative rational exponents instead of radicals and division.

$$\left(\frac{x^3 y^2}{x^4 \sqrt{z}}\right)^3 = \frac{x^9 y^6}{x^{12} z^{3/2}} = x^{-3} y^6 z^{-3/2}$$

2. (**5 pts**) Rationalize the numerator and simplify:

$$\frac{\sqrt{x-3}+1}{x-4}$$

$$\frac{\sqrt{x-3}+1}{x-4} = \frac{\sqrt{x-3}+1}{x-21} \cdot \frac{\sqrt{x-3}-1}{\sqrt{x-3}-1}$$

$$= \frac{(x-3)-1}{(x-4)(\sqrt{x-3}-1)}$$

$$= \frac{x-4}{(x-4)(\sqrt{x-3}-1)}$$

$$= \frac{1}{\sqrt{x-3}-1}$$