

Math 127: Team Quiz 3

Name: KEY

Please show your work in a clear, logical fashion. Use pencil only.

1. Evaluate:  $3^{-1} + 5^{-1} = \frac{1}{3} + \frac{1}{5} = \frac{5}{15} + \frac{3}{15} = \boxed{\frac{8}{15}}$

2. Simplify:  $\left(\frac{2x^{-1}y^3}{2^{-1}x^{-4}y}\right)^{-3} = \frac{2^{-3}x^3y^{-9}}{2^3x^{12}y^{-3}} \xrightarrow{\text{③}} \frac{x^3y^3}{2^6x^{12}y^9} = \frac{x^3y^3}{2^3 \cdot 2^3 x^{12} y^9} = \boxed{\frac{1}{2^6 x^9 y^6}} \text{ OR } \boxed{\frac{1}{64 x^9 y^6}}$

- ① Distribute
- ② Reposition negative exponents
- ③ Combine across
- ④ Reduce

3. Use long division to divide:  $\frac{3x+2x^4-13}{x^2-2x+5} = \boxed{2x^2+4x-2 + \frac{-21x-3}{x^2-2x+5}}$

$$\begin{array}{r}
 2x^2 + 4x - 2 \\
 x^2 - 2x + 5 \overline{) 2x^4 + 0x^3 + 0x^2 + 3x - 13} \\
 \underline{-(2x^4 - 4x^3 + 10x^2)} \phantom{-13} \\
 4x^3 - 10x^2 + 3x \phantom{-13} \\
 \underline{-(4x^3 - 8x^2 + 20x)} \phantom{-13} \\
 -2x^2 - 17x - 13 \\
 \underline{-(-2x^2 + 4x - 10)} \\
 -21x - 3
 \end{array}$$

4. Use synthetic division to divide:  $\frac{y^3+3y^2+25}{y+5} = \boxed{y^2-2y+10 + \frac{-25}{y+5}}$

$$\begin{array}{r}
 -5 \overline{) 1 \quad 3 \quad 0 \quad 25} \\
 \underline{-5 \quad 10 \quad -50} \\
 1 \quad -2 \quad 10 \quad -25
 \end{array}$$