

MATH 1010-2: QUIZ 9  
 November 4, 2010  
**NO CALCULATORS ALLOWED.**

1. (4 points) Simplify as much as possible:

$$\sqrt[3]{5x^4} + \sqrt[3]{40x}$$

**Solution.** We have

$$\begin{aligned}\sqrt[3]{5x^4} + \sqrt[3]{40x} &= \sqrt[3]{5 \cdot x \cdot x^3} + \sqrt[3]{2^3 \cdot 5 \cdot x} \\ &= x\sqrt[3]{5x} + 2\sqrt[3]{5x} \\ &= \boxed{(x+2)\sqrt[3]{5x}}.\end{aligned}$$

2. (3 points) Evaluate the following expression (so that no exponents appear in your final answer):

$$81^{-\frac{3}{4}}$$

**Solution.** We have

$$\begin{aligned}81^{-\frac{3}{4}} &= \frac{1}{81^{\frac{3}{4}}} \\ &= \frac{1}{(3^4)^{\frac{3}{4}}} \\ &= \frac{1}{3^3} \\ &= \boxed{\frac{1}{27}}.\end{aligned}$$

3. (3 points) Simplify:

$$\sqrt{\frac{18x^3}{z^7}}$$

**Solution.** We have

$$\begin{aligned}\sqrt{\frac{18x^3}{z^7}} &= \frac{\sqrt{18x^3}}{\sqrt{z^7}} \\ &= \frac{\sqrt{2 \cdot 3 \cdot 3 \cdot x^2 \cdot x}}{\sqrt{z^3 \cdot z^3 \cdot z}} \\ &= \boxed{\frac{3x\sqrt{2x}}{z^2\sqrt{z}}}.\end{aligned}$$

Name (printed): \_\_\_\_\_

MATH 1010-2: QUIZ 9  
November 4, 2010  
NO CALCULATORS ALLOWED.

1. (4 points) Simplify as much as possible:

$$\sqrt[3]{5y^4} + \sqrt[3]{40y}$$

**Solution.** We have

$$\begin{aligned}\sqrt[3]{5y^4} + \sqrt[3]{40y} &= \sqrt[3]{5 \cdot y \cdot y^3} + \sqrt[3]{2^3 \cdot 5 \cdot y} \\ &= y\sqrt[3]{5y} + 2\sqrt[3]{5y} \\ &= \boxed{(y+2)\sqrt[3]{5y}}.\end{aligned}$$

2. (3 points) Evaluate the following expression (so that no exponents appear in your final answer):

$$16^{-\frac{3}{4}}.$$

**Solution.** We have

$$\begin{aligned}16^{-\frac{3}{4}} &= \frac{1}{16^{\frac{3}{4}}} \\ &= \frac{1}{(2^4)^{\frac{3}{4}}} \\ &= \frac{1}{2^3} \\ &= \boxed{\frac{1}{8}}.\end{aligned}$$

3. (3 points) Simplify:

$$\sqrt{\frac{18z^7}{x^3}}.$$

**Solution.** We have

$$\begin{aligned}\sqrt{\frac{18z^7}{x^3}} &= \frac{\sqrt{18z^7}}{\sqrt{x^3}} \\ &= \frac{\sqrt{2 \cdot 3 \cdot 3 \cdot z^3 \cdot z^3 \cdot z}}{\sqrt{x^2 \cdot x}} \\ &= \boxed{\frac{3z^3\sqrt{2z}}{x\sqrt{x}}}.\end{aligned}$$