

Math 10 Foundations LG 2 Quiz A Answer Sheet

Instructions

1. Mark your quiz.
2. Complete the "How Did I Do?" sheet
3. Return this sheet to Mrs. Craig.
4. Bring your marked quiz and the "How Did I Do?" page to your teacher for a quick interview.

Expectation #1: Apply the exponent laws to simplify expressions with rational exponents.

1. Simplify the following. Leave your answers with positive exponents. (1 mark each)

a) $(x^2)(x^3)$

$$= x^{2+3}$$
$$= x^5$$

b) $(x^4)^3$

$$= x^{4 \times 3}$$
$$= x^{12}$$

c) $\frac{(m^{-2})^3}{(m^2)^{-1}}$

$$= \frac{m^{-6}}{m^{-2}}$$
$$= m^{-6 - (-2)}$$
$$= m^{-4} = \frac{1}{m^4}$$

d) $(9x^2)^{-\frac{1}{2}}(x^2)$

$$= 9^{-\frac{1}{2}}(x^2)^{-\frac{1}{2}}(x^2)$$
$$= 3^{-1}(x^{-1})(x^2)$$
$$= \frac{1}{3}x^1 = \frac{1}{3}x \quad \text{or} \quad \frac{x}{3}$$

Expectation #2: Represent and simplify irrational numbers.

2. Evaluate. (1 mark each)

a) $8^{\frac{2}{3}}$

$$= (\sqrt[3]{8})^2$$
$$= 2^2$$
$$= 4$$

b) $(25^{\frac{1}{2}})\left(\frac{1}{5}\right)^{-1}$

$$= (\sqrt{25})(5)$$
$$= 5 \times 5$$
$$= 25$$

Expectation #3: Convert between powers with rational exponents and radicals.

3. Express $13^{\frac{5}{3}}$ as a radical. (1 mark)

$$= \left(\sqrt[3]{13}\right)^5 \quad \text{or} \quad \sqrt[3]{13^5}$$

Expectation #4: Convert between mixed radicals and entire radicals.

4. Express each mixed radical as an entire radical. (1 mark each)

a) $5\sqrt{2}$

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

$$= \sqrt{50}$$

b) $2\sqrt[3]{3}$

$$= \sqrt[3]{3 \times 2 \times 2 \times 2}$$

$$= \sqrt[3]{24}$$

5. Express each entire radical as an equivalent mixed radical (1 mark each)

a) $\sqrt{48} = \sqrt{(2 \times 2) \times (2 \times 2) \times 3}$

$$\begin{array}{r} 48 \\ \swarrow \\ 24 \\ \swarrow \\ 12 \\ \swarrow \\ 6 \\ \swarrow \\ 3 \end{array}$$

$$= 4\sqrt{3}$$

b) $\sqrt[3]{40} = \sqrt[3]{(2 \times 2 \times 2) \times 5}$

$$\begin{array}{r} 40 \\ \swarrow \\ 20 \\ \swarrow \\ 10 \\ \swarrow \\ 5 \end{array}$$

$$= 2\sqrt[3]{5}$$

Name: _____

TA: _____

Foundations of Math 10 LG 2 Ver A PART B – CALCULATOR

****CALCULATORS ARE PERMITTED ON THIS PART OF THE TEST**

Expectation #2: Represent and simplify irrational numbers.

6. Evaluate to 4 decimal places. (1 mark each)

a) $(7^{-0.3})^2$

$= 0.3111$

b) $\left(\frac{-3}{5^3}\right)^{\frac{1}{3}}$

$= -1.0086$

* YOU SHOULD BE ABLE TO ENTER EACH OF THESE DIRECTLY INTO YOUR CALCULATOR.

c) $\sqrt[3]{45}$

$= 3.5569$

7. Order the set of numbers from least to greatest and then identify the irrational numbers (2 marks).

$2\frac{2}{3}$
 ≈ 2.667

$\sqrt[3]{9}$
 ≈ 2.08

$2.\bar{3}$
 ≈ 2.333

$2\sqrt{1.21}$
 $= 2.2$

$\sqrt[3]{9}$, $2\sqrt{1.21}$, $2.\bar{3}$, $2\frac{2}{3}$

THE CIRCLED NUMBER IS IRRATIONAL.

8. A bank offers a 1.2% interest rate per year on deposits. You decide that you will put \$500 in the bank. This situation can be modeled with the equation $A = 500(1 + i)^n$ where A is the amount of money after the term, i is the interest rate as a decimal number and n is the number of years in the term deposit. How much money will you have in the bank after 5 years? (2 marks)

$A = 500(1 + .012)^5$
 $= \$530.73$

YOU WILL HAVE \$530.73.

* DON'T FORGET UNITS!!

9. A company produces sections of fencing. The number of fences produced is given by this formula: $n = 2.6\sqrt{h}$ where n is the number of fences produced and h is the hours worked. How many more fences will be produced by a crew who works 100 hours compared to a crew who works 60 hours? (2 marks)

$$n = 2.6\sqrt{100}$$
$$= 26 \text{ FENCES}$$

$$n = 2.6\sqrt{60}$$
$$= 20.14 \text{ FENCES}$$

$$26 - 20 = 6$$

THE CREW THAT WORKS 100 HOURS WILL PRODUCE
6 MORE FENCES.

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