

Name: _____

Solutions

This quiz will not count towards your grade. The purpose of this quiz is to let me get to know you better. For this quiz, you will not need a calculator. Do not use one.

1. Find the zeros of $3x^3 - 12x = 0$.

Factor:

$$3x(x^2 - 4) = 0$$

$$3x(x-2)(x+2) = 0$$

$$x = 0, 2, -2$$

2. Simplify:

(a) $\frac{a^3 b^{-1} c^2}{a^{-2} \sqrt{b^4 d}}$

$$\frac{a^3 a^2 c^2}{b \sqrt{b^4 d}} = \frac{a^5 c^2}{b \cdot b^2 \sqrt{d}} = \frac{a^5 c^2}{b^3 \sqrt{d}}$$

Recall: $x^{-n} = \frac{1}{x^n}$
and
 $\frac{1}{x^{-n}} = x^n$
 $x^n x^m = x^{n+m}$

(b) $\sqrt{4x^2 + 4a^2}$

$$\sqrt{4(x^2 + a^2)} = \sqrt{4} \cdot \sqrt{x^2 + a^2} = 2\sqrt{x^2 + a^2}$$

Warning!

$$\sqrt{a+b} \neq \sqrt{a} + \sqrt{b} !$$

(c) $\frac{2(x+2)^3 - 6(x+2)^2}{((x+2)^3)^2}$

Factor out $2(x+2)^2$

$$\frac{2 \cancel{(x+2)^2}^2 ((x+2) - 3)}{\cancel{(x+2)^6}^6} = \frac{2(x-1)}{(x+2)^4}$$

Warning!

$$\frac{2 \cancel{(x+2)^3}^3 - 6 \cancel{(x+2)^2}^2}{(\cancel{(x+2)^3}^3)^2}$$

No!

OVER

3. Solve for x :

(a) $\frac{3x+5}{x+2} = 7$

multiply both sides
by $x+2$:

$$3x+5 = 7(x+2)$$

$$3x+5 = 7x+14$$

$$\begin{array}{r} -14 \\ -3x \\ -9 = 4x \end{array}$$

$$-9 = 4x$$

$$x = -\frac{9}{4}$$

(b) i. $|x-2| = 1$

If $|x-2| \leq 1$,

$x-2$ is either 1 or -1.

$$x-2 = \pm 1 \rightarrow x = \pm 1 + 2$$

$$x = 3, 1$$

ii. $|x-2| = -1$

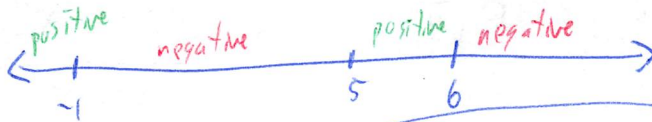
No solution

An absolute value
cannot be negative.

(c) $(x+1)(x-5)(6-x) > 0$

This expression is zero at $x = -1, 5, 6$.

Test between these to determine:



So $x < -1$ or $5 < x < 6$

4. The rest of this quiz includes some personal questions.

(a) What are your majors/minors? (If you are undeclared but know what you want, say it.) Why do you want to study those topics?

(b) What other classes are you taking?