Doe

Math 108 Sec 01 Quiz 2 Key (+1)

1. Factor completely.

$8m^3 - n^3 = (2m - n)(4m^2 + 2mn + n^2)$

for recog. d of c. (+1) factorization

$4x^3 + 12x^2 - 9x - 27 = (4x^3 + 12x^2) - (9x + 27)$

(+1) $= 4x^2(x+3) - 9(x+3)$

(+1) $= (4x^2 - 9)(x+3)$

(+1) $= (2x-3)(2x+3)(x+3)$

Key
$a^3 = 8m^3$
$a = 2m$
$a^2 = 4m^2$
$b^3 = n^3$
$b = n$
$b^2 = n^2$

2. Solve for x.

$x^2 - 19x + 88 = 0$

(+1) $(x-8)(x-11) = 0$

$x = 8, \quad x = 11$

$x^2 + 5x - 7 = 0$ (complete the square to solve)

$x^2 + 5x = 7$

$x^2 + 5x + \left(\frac{5}{2}\right)^2 = 7 + \left(\frac{5}{2}\right)^2$ (+1)

(+1) $\left(x + \frac{5}{2}\right)^2 = 7 + \frac{25}{4}$

$\left(x + \frac{5}{2}\right)^2 = \frac{28+25}{4}$

(+1) $x + \frac{5}{2} = \frac{\pm\sqrt{53}}{2}$ or $= \pm\sqrt{\frac{53}{4}}$

$x = \frac{-5 \pm \sqrt{53}}{2}$ (+1)

or $-\frac{5}{2} \pm \sqrt{\frac{53}{4}}$

3. Simplify the first expression, stating any restrictions on x in final answer: Combine the second.

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

$\frac{7}{x-1} + \frac{10x}{x^2-1} - \frac{5}{x+1} = \frac{7(x+1)}{x^2-1} + \frac{10x}{x^2-1} - \frac{5(x-1)}{x^2-1}$

LCD $= x^2 - 1$ (+1)

(+1) $= \frac{12x + 12}{x^2 - 1} = \frac{12}{x-1}$ (+1) canc

$12\cancel{(x+1)}$

$\cancel{(x+1)}(x-1)$

where $x \neq -1$ (+1)

4. Solve for x. Check your answer.

$\left(\sqrt{2x+4}\right)^2 = \left(\sqrt{x+3} + 1\right)^2 \rightarrow$ $\boxed{\text{Zero if } (x+3 + 1)}$

$2x + 4 = x + 3 + 2\sqrt{x+3}$ (+1)

$x + 1 = 2\sqrt{x+3}$ (+1)

~~$x^2 + 2x + 1 = 4(x+3)$ (+1)~~

~~$x^2 - 2x - 11 = 0$~~

$x^2 = 4(x+3)$ (+1)

$x^2 = 4x + 12$ (+1) set = zero

$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$x = 6 \quad x = -2$ (+1)