

MAT 012 Lecture Notes: ch 6.6 equations; ch 7.1 rational expressions

Chapter 6.6

<i>Example:</i> $6x^2 - 19x + 10 = 0$	Factored version: $(3x - 2)(2x - 5) = 0$	Answers: $x = \frac{2}{3}$ or $x = \frac{5}{2}$
<i>Example:</i> $9x^3 - 45x = -12x^2$	Factored version: $3x(3x - 5)(x + 3) = 0$	Answers: $x = 0$ or $x = \frac{5}{3}$ or $x = -3$
<i>Example:</i> $4x^4 - 16x^2 + 12x^3 = 0$	Factored version: $4x^2(x + 4)(x - 1) = 0$	Answers: $x = 0$ or $x = -4$ or $x = 1$
<i>Example:</i> $32x^2 - 200 = 0$	Factored version: $8(2x + 5)(2x - 5) = 0$	Answers: $x = -\frac{5}{2}$ or $x = \frac{5}{2}$
<i>Example:</i> $x^2 + 81 = 0$	Factored version: <i>does not factor</i> <i>Left side is prime</i>	Answers: no solutions (in the real numbers)
<i>Example:</i> $(x + 1)(x - 2) = 28$	Factored version: $(x + 5)(x - 6) = 0$	Answers: $x = -5$ or $x = 6$
<i>Example:</i> $10x^3 - 60x + 25x^2 = 0$	Factored version: Hint: <i>note the order of the terms in the given left side</i> $5x(x + 4)(2x - 3) = 0$	Answers: $x = 0$ or $x = -4$ or $x = \frac{3}{2}$

Chapter 7.1

<i>Example:</i> $\frac{5x - 10}{x - 2}$	Steps and simplified Answer: $= \frac{5(x - 2)}{x - 2} = 5$
<i>Example:</i> $\frac{4x^2 + 16x}{x^2 + x - 12}$	Steps and simplified Answer: $= \frac{4x(x + 4)}{(x - 3)(x + 4)} = \frac{4x}{x - 3}$
<i>Example:</i> $\frac{x - 2}{2 - x}$	Steps and simplified Answer: $= -\frac{x - 2}{x - 2} = -1$