Review 3A

MAT 105 Show all of your work.

1. Subtract and simplify $(2x^2 - 6x + 1) - (3x^2 - x - 1)$.
2. Simplify $(4x^2 - 3) + [2 - (x^2 - x + 1)]$.
3. If $P(x) = x^2 - 3x + 1$, evaluate $P(-1)$.
4. Multiply and simplify $(x - 2)(x + 2)$.
5. Multiply and simplify $(x^2 - 6x + 3)(x - 3)$.
6. Multiply and simplify $x^2(x^k - 2)$
7. Square and simplify $(3x + 1)^2$.
8. Divide $\dfrac{3x^3 - 2x^2 + x + 1}{x - 2}$ to write in the form $Q + \dfrac{R}{D}$ where degree of R is less than the degree of D.
9. Divide $\dfrac{3x^3 - 2x^2 + x + 1}{x^2 - 2}$ to write in the form $Q + \dfrac{R}{D}$ where degree of R is less than the degree of D.
10. Factor completely $y^2 - 81$.
11. Factor completely $x^2 - x - 6$.
12. Factor completely $2x^2 - 7x + 6$.
13. Factor completely $x^2y^2 - 7xy^2 - 8y^2$.
14. Factor completely $(x - 5y)^2 + (x - 5y) - 2$.
15. Factor completely $x^3 - 125$.
16. Factor completely $xy + 2x - 3y - 6$.
17. Factor completely $3x^{-2} + 9x^{-4}$.
18. Factor completely $3x^2 - 27$.
19. Solve $2x^2 + 5x - 3 = 0$.
20. Solve $x^3 + x = 2x^2$.

Answers to problems above: 1. $-x^2 - 5x + 2$ 2. $3x^2 + x - 2$ 3. 5 4. $x^2 - 4$ 5. $x^3 - 9x^2 + 21x - 9$ 6. $x^{k+2} - 2x^2$ 7. $9x^2 + 6x + 1$ 8. $3x^2 + 4x + 9 + \frac{19}{x-2}$ 9. $3x - 2 + \frac{7x-3}{x^2-2}$ 10. $(y - 9)(y + 9)$ 11. $(x - 3)(x + 2)$ 12. $(2x - 3)(x - 2)$ 13. $(x - 8)(x + 1)y^2$ 14. $(x - 5y + 2)(x - 5y - 1)$ 15. $(x - 5)(x^2 + 5x + 25)$ 16. $(x - 3)(y + 2)$ 17. $3x^{-4}(x^2 + 3)$ 18. $3(x - 3)(x + 3)$ 19. $x = 1/2$, $x = -3$ 20. $x = 0$, $x = 1$

Review 3B

MAT 105 This review contains more problems than the exam

1. Subtract and simplify $(3x^3 - 2x + 1) - (4x^2 + 2)$.
2. Simplify $2 - (x^2 - x + 1) + (2x^2 - x - 1)$.
3. If $P(x) = x^3 - 2x$, evaluate $P(2)$.
4. Multiply and simplify $(3x - 8)(x - 4)$.
5. Multiply and simplify $(2x + 1)(x^2 + 2x + 1)$.
6. Multiply and simplify $(x^k - 3)(x^k - 2)$
7. Square and simplify $(2x + 5)^2$.
8. Divide $\dfrac{x^3 + 4x^2 + 4x + 5}{x + 1}$ to write in the form $Q + \dfrac{R}{D}$ where degree of R is less than the degree of D.
9. Divide $\dfrac{x^3 + 4x^2 + 4x + 5}{x^2 + x + 1}$ to write in the form $Q + \dfrac{R}{D}$ where degree of R is less than the degree of D.
10. Factor completely $4x^2 - 49$.
11. Factor completely $x^2 - 3x + 2$.
12. Factor completely $4x^2 - 25x + 6$.
13. Factor completely $xy^2 - xy - 6x$.
14. Factor completely $x^2(x + y) - 5x(x + y) + 4(x + y)$.
15. Factor completely $27 + 8x^3$.
16. Factor completely $xy - 2x - 4y + 8$.
17. Factor completely $1 + x^{-1} - 2x^{-2}$.
18. Factor completely $24x^3 - 81$.
19. Solve $2x^2 - x - 6 = 0$.
20. Solve $x^3 = 4x$.

Answers to problems above: 1. $3x^3-4x^2-2x-1$ 2. x^2 3. 4 4. $3x^2-20x+32$ 5. $2x^3+5x^2+4x+1$ 6. $x^{2k}-5x^k+6$ 7. $4x^2+20x+25$ 8. $x^2+3x+1+\frac{4}{x+1}$ 9. $x+3+\frac{2}{x^2+x+1}$ 10. $(2x-7)(2x+7)$ 11. $(x-2)(x-1)$ 12. $(4x-1)(x-6)$ 13. $x(y-3)(y+2)$ 14. $(x+y)(x-4)(x-1)$ 15. $(3+2x)(9-6x+4x^2)$ 16. $(x-4)(y-2)$ 17. $x^{-2}(x+2)(x-1)$ 18. $3(2x-3)(4x^2+6x+9)$ 19. $x=-3/2$, $x=2$ 20. $x=0$, $x=2$, $x=-2$