Math 0482 Final Exam Review: Chapter 4

Sections 1-8

Factor completely. If not factorable, indicate PRIME.

1) $45x^3 - 20x$

2) $12x^4 - 70x^3 + 50x^2$

3) $-20x^2 + 32x - 3$

4) $-x^3y + 9xy^3$

5) $24a^4b^2 + 3ab^5$ ***(HINT: Sum of Cubes)***

6) $64a^6b^6 - 1$

7) $64x^2 + 1$

8) $x^3 + x^2y - xy^2 - y^3$

Solve by factoring.

9) $9x^2 + 8x = 0$

10) $x^2 - 1 = 0$

11) $x^2 - 12x + 20 = 0$

12) $x^2 - 2x - 48 = 0$

13) $(2x + 1)(x - 2) = 3$

14) $2 - (x - 4)^2 = -7$

15) $(x - 6)(x + 3) = -18$

16) $(x + 5)(2x - 1) = 3(2x - 1)$

17) $\frac{1}{2}x^2 + \frac{2}{3}x - \frac{1}{8} = 0$

18) $\frac{1}{4}x^2 - \frac{19}{12}x + \frac{1}{2} = 0$

19) $x^3 - 2x^2 - 24x = 0$

20) $x^4 - 5x^2 + 4 = 0$

Math 0482 Final Exam Review: Chapter 4

Set up and solve algebraically

21) The height in feet of an object dropped from the top of a 16-foot ladder is given by $h(t) = -16t^2 + 16$, where t represents the time in seconds after the object has been dropped. How long will it take to hit the ground?

Solve or factor.

22) $x^2 - 25$

23) $x^2 - 121 = 0$

24) $16x^2 - 22x - 3 = 0$

25) $3x^2 - 14x - 5$

26) $x^3 - x^2 - 2x - 2$

27) $3x^2 = -15x$

Find a polynomial equation with integer coefficients, given the solutions?

28) 5, −2

29) −4, 0, 3

State the restrictions and simplify.

30) $\dfrac{108x^3}{12x^2}$

31) $\dfrac{56x^2(x-2)^2}{8x(x-2)^3}$

32) $\dfrac{64 - x^2}{2x^2 - 15x - 8}$

Math 0482 Final Exam Review: Chapter 4

33) $\dfrac{3x^2+28x+9}{81-x^2}$

34) $\dfrac{x^2-25}{5x^2}\cdot\dfrac{10x^2-15x}{2x^2+7x-15}$

35) $\dfrac{28x^2(2x-3)}{4x^2-9}\div\dfrac{7x}{4x^2-12x+9}$

Perform the operations and state the restrictions.

36) Given $f(x)=\dfrac{4x^2+39x-10}{x^2+3x-10}$ and $g(x)=\dfrac{2x^2+7x-15}{x^2+13x+30}$, find $(f\cdot g)(x)$

37) Given $f(x)=\dfrac{42x^2}{2x^2+3x-2}$ and $g(x)=\dfrac{14x}{4x^2-4x+1}$, find $(f/g)(x)$.

38) Given $f(x)=3x-5$, simplify $\dfrac{f(x+h)-f(x)}{h}$.

39) Given $g(x)=2x^2-x+1$, simplify $\dfrac{g(x+h)-g(x)}{h}$.

State the restrictions and simplify.

40) $\dfrac{2}{x}+5x$

41) $\dfrac{x}{x-2}+\dfrac{3}{x+3}$

42) $\dfrac{5}{x}-\dfrac{19x+25}{2x^2+5x}$

43) $\dfrac{3x}{2x-1}-\dfrac{x-4}{x+4}+\dfrac{12(2-x)}{2x^2+7x-4}$

Solve.

44) $\dfrac{3}{x}=\dfrac{1}{2x+15}$

45) $\dfrac{x+1}{x-4}+\dfrac{4}{x+6}=-\dfrac{10}{x^2+2x-24}$