precalc Name_____ ID: 1

summer work

Date_____ Period____

Simplify each expression. No calculators.

1) $\frac{4}{3} + \frac{5}{6}$

2) $\frac{2}{12} - \frac{1}{5}$

3) $\frac{2}{12} - \frac{11}{8}$

4) $\frac{1}{15} + \frac{3}{14}$

Simplify each expression. No calculators!

5) $\dfrac{\frac{8}{30}}{\frac{12}{5}}$

6) $\frac{1}{8} \cdot \frac{36}{5}$

7) $\dfrac{\frac{60}{80}}{\frac{10}{-8}}$

8) $\frac{125}{56} \cdot \frac{16}{25}$

9) $\dfrac{-\frac{10}{16}}{\frac{36}{60}}$

10) $\frac{12}{40} \cdot \frac{70}{30}$

Factor each completely.

11) $x^2 + 2x$

12) $3a^2 - 21a + 36$

13) $14x^2 + 114x + 112$

14) $6p^4 - 64p^3 + 128p^2$

15) $6k^3 + 13k^2 + 6k$

16) $6x^3 - 7x^2 - 24x$

17) $80r^3 - 200r^2 + 32r - 80$

18) $150x^3 + 210x^2 - 175x - 245$

19) $7m^3 + 56m^2 + 6m + 48$

Simplify each and state the excluded values.

20) $\dfrac{x^2 + 6x - 27}{3x^3 + 18x^2 - 81x}$

21) $\dfrac{v^3 - 2v^2 - v + 2}{v^2 + 2v + 1}$

Simplify each expression.

22) $\dfrac{x - 6}{x - 5} \cdot \dfrac{8x^3 - 40x^2}{x - 6}$

23) $\dfrac{n^2 + 3n + 2}{3n^2} \cdot \dfrac{1}{n + 2}$

24) $\dfrac{1}{n - 5} \div \dfrac{4n^2}{n^2 - 3n - 10}$

25) $\dfrac{1}{n + 6} \div \dfrac{n + 9}{n^2 - 2n - 48}$

26) $\dfrac{3x}{x - 4} - \dfrac{5}{x - 1}$

27) $\dfrac{5}{v + 2} + \dfrac{2}{v - 6}$

28) $\frac{2}{x-7} + \frac{5x}{x+5}$

29) $\frac{2}{x+3} - \frac{2}{x+7}$

Describe the end behavior of each function.

30) $f(x) = x^3 - 3x^2 + 1$

A) Rises to the left. Rises to the right
B) Falls to the left. Rises to the right
C) Rises to the left. Falls to the right
D) Falls to the left. Falls to the right

31) $f(x) = x^4 - x^2 - x - 2$

A) Rises to the left. Falls to the right
B) Falls to the left. Falls to the right
C) Rises to the left. Rises to the right
D) Falls to the left. Rises to the right

32) $f(x) = -2x^2 + 4x$

A) Falls to the left. Falls to the right
B) Rises to the left. Rises to the right
C) Rises to the left. Falls to the right
D) Falls to the left. Rises to the right

33) $f(x) = -x^5 + 3x^3 - 2$

A) Rises to the left. Rises to the right
B) Falls to the left. Falls to the right
C) Falls to the left. Rises to the right
D) Rises to the left. Falls to the right

Simplify each expression.

34) $(7p^3 - p^4 - 4p) + (6p - 3p^2 + 5p^4 + 4p^3) - (2p^3 + p^4 + p)$

35) $(8n^4 + 7 - 3n^2) + (8n^4 + 5n^2 + 2n^3 - 7) - (4n^3 + 7 - n^2)$

Find each product.

36) $(2x^2 + 6x - 7)(x - 1)$

37) $(5v^2 + 2v - 5)(v^2 - 4v - 4)$

Solve each system by substitution.

38) $y = -6$
$2x - y = 10$

39) $-8x - y = 19$
$y = -7x - 17$

40) $y = 2x - 4$
$6x + 4y = -16$

Solve each equation. No decimals, leave all answers as fractions with simplified radicals if needed.

41) $2(7b + 6) - 3b = 89$

42) $-158 = -4p - 6(8 + 3p)$

43) $-(-3b + 6) - 2 = 2(-7 + b) + 3b$

44) $-52 - 32v = -4(4 + 8v)$

45) $\frac{1}{2} = \frac{x - 3}{6} + \frac{1}{3}$

Solve each equation.

46) $|v + 2| = 2$

47) $|4x| - 6 = 34$

Solve each equation by factoring. No decimals, leave all answers as fractions with simplified radicals if needed.

48) $m^2 - 11m + 24 = 0$

49) $n^2 + 4n = 0$

Solve each equation by taking square roots. No decimals, leave all answers as fractions with simplified radicals if needed.

50) $10v^2 + 2 = -133$

51) $6 - 6n^2 = -18$

Solve each equation. Remember to check for extraneous solutions.

52) $\frac{n - 2}{n} + \frac{1}{n} = \frac{n - 6}{3n}$

53) $\frac{3}{x^2 - 3x} = \frac{1}{x^2 - 3x} + \frac{1}{x}$