Algebra 2 - Mr. C. - All work on looseleaf. Name_____

Practice for Q4Exam1

Date_____ Period____

1) If a varies jointly with b and c, which statement is also true?

2) P varies directly with Q and inversely with R, and P = 9 when Q = 3 and R = 4. Find Q when P = 1 and R = 0.5.

3) The base b of a parallelogram with a fixed area varies inversely as the height h, and b = 12 cm when h = 8 cm. Find b when h = 3 cm.

4) The number of tiles n needed to cover a floor varies directly as the area a of the floor, and n = 180 when a = 20 ft^2. Find n when a = 34 ft^2.

5) The simple interest I earned over a particular period of time varies jointly as the principal P and rate r, and I = \$264 when P = \$1100 and r = 0.12. Find P when I = \$360 and r = 0.09.

6) Is the following statement sometimes, always or never true? "A linear function is a direct variation."

7) The circumference of a circle C varies directly as the radius r, and C = 7π ft when r = 3.5 ft. Find r when C = 4.5π ft.

8) The area A of a triangle varies jointly as the base b and the height h, and A = 12 m^2 when b = 6 m and h = 4 m. Find b when A = 36 m^2 and h = 8 m.

Use the information provided to write the standard form equation of each circle.

9) Center: $(-5, 1)$
Radius: 12

10) Center: $(7, 8)$
Radius: $\sqrt{113}$

Find the common ratio.

11) 4, 24, 144, 864, ...

Find the common difference.

12) –29, 171, 371, 571, ...

Simplify each and state the excluded values.

13) $\frac{1}{m+1} \cdot \frac{2m+20}{m+10}$

14) $\frac{n^2+10n+25}{n+5} \cdot \frac{1}{n^2+15n+56}$

15) $\frac{x+1}{6x^2} \cdot \frac{6x^2}{5x^2-35x}$

16) $\frac{4n^2}{10-n} \cdot \frac{6n-60}{6}$

17) $\frac{6k^3-54k^2}{5} \cdot \frac{5}{6k^2}$

18) $\frac{7r^2-42r}{9} \cdot \frac{9}{r^2+4r-60}$

19) $\frac{p-3}{p+2} \cdot \frac{3p^3+6p^2}{3p^3+15p^2}$

20) $\frac{7}{15x^2-12x} \cdot \frac{30x-24}{7}$

21) $\frac{n-4}{20} \div \frac{n-4}{10}$

22) $\frac{4x-8}{2-x} \div \frac{4}{x+4}$

23) $\frac{1}{7n} \div \frac{10}{7n^2+63n}$

24) $\frac{b-2}{6b-36} \div \frac{b-2}{b+4}$

25) $\frac{1}{x^2+4x+3} \div \frac{x-5}{x^2-25}$

26) $\frac{v+4}{8v+56} \div \frac{v+4}{10v}$

27) $\frac{5a}{4a-12} \div \frac{5a}{a^2+4a-21}$

28) $\frac{k+2}{k^2+9k+14} \div \frac{1}{9k^2+18k}$

29) $\frac{2x+1}{6x+3} \div \frac{2x-4}{2x+10}$

30) $\frac{10n^2+13n-3}{5n-1} \div \frac{2n^2+5n+3}{n^2-16}$

31) $\frac{25p^2+35p+12}{3p^2+2p-5} \div \frac{25p^2+35p+12}{15p+25}$

32) $\frac{25m^2+15m}{25m^2+10m-3} \div \frac{3m+4}{15m^2+17m-4}$

33) $\frac{4x+6}{8x^3+8x^2} \div \frac{4x^2+6x}{4x^2+4x}$

34) $\frac{5}{6b-2} \div \frac{5b+20}{6b-2}$

35) $\dfrac{25n-5}{25n^2-10n+1} \div \dfrac{2}{25n^3-5n^2}$

36) $\dfrac{5r^2+8r+3}{20r-20} \div \dfrac{5r^2+18r+9}{5r-5}$

Determine if the sequence is arithmetic. If it is, find the common difference and the term named in the problem.

37) 26, 18, 10, 2, ...
Find a_{33}

38) −19, −25, −31, −37, ...
Find a_{24}

39) 18, −182, −382, −582, ...
Find a_{40}

40) −19, −13, −7, −1, ...
Find a_{29}

Simplify each expression.

41) $\dfrac{3}{6y^3} + \dfrac{6}{6x^3}$

42) $\dfrac{5}{5x} - \dfrac{5}{5y^3}$

43) $\dfrac{5a}{3b} - \dfrac{3a}{3}$

44) $\dfrac{5v}{4} + \dfrac{4u}{4v}$

45) $\dfrac{5x}{4y^3} - \dfrac{3x}{5}$

46) $\dfrac{5m}{5} - \dfrac{m-n}{3n^3}$

47) $\dfrac{5x}{3y} - \dfrac{5}{6x}$

48) $\dfrac{3}{5} + \dfrac{4m}{3n}$

49) $\dfrac{4}{3xy} + \dfrac{3x}{6}$

50) $\dfrac{6}{2a^2b} - \dfrac{4}{5a}$

51) $\dfrac{4x}{4x^2y} - \dfrac{5}{3x}$

52) $\dfrac{5v}{4} - \dfrac{4}{3v}$

53) $\dfrac{5}{3} + \dfrac{x-6}{x+5}$

54) $\dfrac{6}{9k+18} + \dfrac{2}{3}$

55) $\frac{n+5}{n-3} + \frac{2n}{6}$

56) $\frac{5}{3} + \frac{r-4}{6r-8}$

57) $\frac{b-2}{2b^2+12b} + \frac{6b}{3}$

58) $\frac{2}{a-2} - \frac{4}{a+1}$

59) $\frac{5}{2} - \frac{2}{x+4}$

60) $\frac{6v}{2} + \frac{v-6}{3v-18}$

61) $\frac{5}{2m^2} + \frac{m-4}{5m-2}$

62) $\frac{6p}{p+2} + \frac{3p}{p-5}$

63) $\frac{3}{x-2} - \frac{2}{3x-2}$

64) $\frac{x-2}{2x+3} + \frac{4}{5x}$

65) $\frac{3}{9n^2-27n+18} - \frac{2n}{3}$

66) $\frac{3n}{2n} + \frac{n+6}{6n^3+27n^2-15n}$

67) $\frac{2n}{6n-1} + \frac{3n}{n-5}$

68) $\frac{2}{x-4} - \frac{2x}{x-2}$

69) $\frac{3}{b-3} + \frac{6}{3b+1}$

70) $\frac{6a}{a+4} - \frac{4a}{a-1}$

71) $\frac{k-3}{9k^3-18k^2-27k} - \frac{4}{2k}$

72) $\frac{3}{x+1} + \frac{3x}{x+2}$

73) $\frac{3k}{k+3} - \frac{5}{3k^2-18k}$

74) $\frac{3}{4} + \frac{v-1}{2v^2-11v+5}$

75) $\frac{2p}{6p+36} - \frac{3p}{p-4}$

76) $\frac{x-5}{10x^2-58x-12} - \frac{4}{3x}$

Answers to Practice for Q4Exam1 (ID: 1)

1) a varies directly with b and directly with c

2) $\frac{1}{24}$

3) 32

4) 306

5) \$2000

6) sometimes

7) 2.25 ft.

8) 9 m

9) $(x+5)^2+(y-1)^2=144$

10) $(x-7)^2+(y-8)^2=113$

11) $r=6$

12) $d=200$

13) $\frac{2}{m+1}$; $\{-1, -10\}$

14) $\frac{n+5}{(n+8)(n+7)}$; $\{-5, -8, -7\}$

15) $\frac{x+1}{5x(x-7)}$; $\{0, 7\}$

16) $-4n^2$; $\{10\}$

17) $k-9$; $\{0\}$

18) $\frac{7r}{r+10}$; $\{6, -10\}$

19) $\frac{p-3}{p+5}$; $\{-2, 0, -5\}$

20) $\frac{2}{x}$; $\left\{0, \frac{4}{5}\right\}$

21) $\frac{1}{2}$; $\{4\}$

22) $-(x+4)$; $\{2, -4\}$

23) $\frac{n+9}{10}$; $\{0, -9\}$

24) $\frac{b+4}{6(b-6)}$; $\{6, -4, 2\}$

25) $\frac{x+5}{(x+3)(x+1)}$; $\{-3, -1, 5, -5\}$

26) $\frac{5v}{4(v+7)}$; $\{-7, 0, -4\}$

27) $\frac{a+7}{4}$; $\{3, -7, 0\}$

28) $\frac{9k(k+2)}{k+7}$; $\{-7, -2, 0\}$

29) $\frac{x+5}{3(x-2)}$; $\left\{-\frac{1}{2}, -5, 2\right\}$

30) $\frac{(n-4)(n+4)}{n+1}$; $\left\{\frac{1}{5}, 4, -4, -1, -\frac{3}{2}\right\}$

31) $\frac{5}{p-1}$; $\left\{1, -\frac{5}{3}, -\frac{4}{5}, -\frac{3}{5}\right\}$

32) $5m$; $\left\{\frac{1}{5}, -\frac{3}{5}, -\frac{4}{3}\right\}$

33) $\frac{1}{2x^2}$; $\left\{0, -1, -\frac{3}{2}\right\}$

34) $\frac{1}{b+4}$; $\left\{\frac{1}{3}, -4\right\}$

35) $\frac{25n^2}{2}$; $\left\{\frac{1}{5}, 0\right\}$

36) $\frac{r+1}{4(r+3)}$; $\left\{1, -3, -\frac{3}{5}\right\}$

37) Common Difference: $d=-8$
$a_{33}=-230$

38) Common Difference: $d=-6$
$a_{24}=-157$

39) Common Difference: $d=-200$
$a_{40}=-7782$

40) Common Difference: $d=6$
$a_{29}=149$

41) $\frac{x^3+2y^3}{2y^3x^3}$

42) $\frac{y^3-x}{xy^3}$

43) $\frac{-3ab+5a}{3b}$

44) $\frac{5v^2+4u}{4v}$

45) $\frac{25x-12xy^3}{20y^3}$

46) $\frac{3mn^3-m+n}{3n^3}$

47) $\frac{10x^2-5y}{6yx}$

48) $\frac{9n+20m}{15n}$

49) $\frac{8+3x^2y}{6xy}$

50) $\frac{15-4ab}{5a^2b}$

51) $\frac{3-5y}{3xy}$

52) $\frac{15v^2-16}{12v}$

53) $\frac{8x+7}{3(x+5)}$

54) $\frac{6+2k}{3(k+2)}$

55) $\frac{15+n^2}{3(n-3)}$

56) $\frac{33r-52}{6(3r-4)}$

57) $\frac{4b^3+24b^2+b-2}{2b(b+6)}$

58) $\frac{-2a+10}{(a-2)(a+1)}$

59) $\frac{5x+16}{2(x+4)}$

60) $\frac{9v+1}{3}$

61) $\frac{25m-10+2m^3-8m^2}{2m^2(5m-2)}$

62) $\frac{9p^2-24p}{(p-5)(p+2)}$

63) $\frac{7x-2}{(x-2)(3x-2)}$

64) $\frac{5x^2-2x+12}{5x(2x+3)}$

65) $\frac{1-2n^3+6n^2-4n}{3(n-2)(n-1)}$

66) $\frac{18n^3+81n^2-43n+12}{6n(2n-1)(n+5)}$

67) $\frac{20n^2-13n}{(n-5)(6n-1)}$

68) $\frac{10x-4-2x^2}{(x-4)(x-2)}$

69) $\frac{15b-15}{(b-3)(3b+1)}$

70) $\frac{2a^2-22a}{(a-1)(a+4)}$

71) $\frac{-17-18k}{9k(k+1)}$

72) $\frac{6x+6+3x^2}{(x+2)(x+1)}$

73) $\frac{9k^3-54k^2-5k-15}{3k(k-6)(k+3)}$

74) $\dfrac{6v^2 - 29v + 11}{4(v-5)(2v-1)}$

75) $\dfrac{-8p^2 - 58p}{3(p-4)(p+6)}$

76) $\dfrac{-37x^2 + 217x + 48}{6x(x-6)(5x+1)}$