Math 098 Quiz 6 Preparation Ch 5.5, 5.6, 5.7, & 6.1 v02
NO BOOK/ NO NOTES/YES CALCUATOR
Winter 2016 Dressler

Name_____

Solve the rational equation.

1) $\frac{1}{x} + \frac{1}{x-6} = \frac{x-5}{x-6}$ 1) _____

2) $\frac{1}{x} + \frac{1}{x-4} = \frac{x-3}{x-4}$ 2) _____

3) $\frac{x}{2x+2} = \frac{-2x}{4x+4} + \frac{2x-3}{x+1}$ 3) _____

4) $\frac{6}{5x} - \frac{1}{x+1} = \frac{1}{2x^2+2x}$ 4) _____

5) $\frac{5}{4x} - \frac{1}{x+1} = \frac{2}{3x^2+3x}$ 5) _____

6) $\frac{7}{y+3} - \frac{9}{y-3} = \frac{6}{y^2-9}$ 6) _____

7) $\frac{5}{y+5} - \frac{7}{y-5} = \frac{2}{y^2-25}$ 7) _____

8) $\frac{x}{x-2} + 4 = \frac{2}{x-2}$ 8) _____

9) $\frac{x}{x-6} - 4 = \frac{6}{x-6}$ 9) _____

10) $\frac{x}{x-4} + 3 = \frac{4}{x-4}$ 10) _____

11) $\frac{x}{x-8} - 6 = \frac{8}{x-8}$ 11) _____

12) $\frac{-1}{x+2} = \frac{1}{x+4} - \frac{2}{x^2+6x+8}$ 12) _____

13) $\frac{-3}{x-7} = \frac{-1}{x-14} - \frac{-21}{x^2-21x+98}$ 13) _____

14) $\frac{-4}{x-1} = \frac{6}{x-2} - \frac{-4}{x^2-3x+2}$ 14) _____

15) $\frac{3}{x-2} = \frac{7}{x-4} - \frac{6}{x^2-6x+8}$ 15) _____

Solve the problem.

16) A painter can finish painting a house in 3 hours. Her assistant takes 5 hours to finish the same job. How long would it take for them to complete the job if they were working together? 16) _____

17) A painter can finish painting a house in 7 hours. Her assistant takes 9 hours to finish the same job. How long would it take for them to complete the job if they were working together? 17) _____

18) One pump can drain a pool in 12 minutes. When a second pump is also used, the pool only takes 5 minutes to drain. How long would it take the second pump to drain the pool if it were the only pump in use? 18) _____

19) One pump can drain a pool in 10 minutes. When a second pump is also used, the pool only takes 6 minutes to drain. How long would it take the second pump to drain the pool if it were the only pump in use? 19) _____

20) A baker can decorate the day's cookie supply four times as fast as his new assistant. If they decorate all the cookies working together in 20 minutes, how long would it take for each of them to decorate the cookies working individually? 20) _____

21) A baker can decorate the day's cookie supply four times as fast as his new assistant. If they decorate all the cookies working together in 16 minutes, how long would it take for each of them to decorate the cookies working individually? 21) _____

22) A baker can decorate the day's cookie supply four times as fast as his new assistant. If they decorate all the cookies working together in 24 minutes, how long would it take for each of them to decorate the cookies working individually? 22) _____

Divide using long division.

23) $\frac{2m^3 + 4m^2 - 26m + 20}{m + 5}$ 23) _____

24) $\frac{9m^3 + 57m^2 - 39m + 21}{m + 7}$ 24) _____

25) $\frac{3r^3 - 10r^2 - 19r - 30}{r - 5}$ 25) _____

26) $\frac{4r^3 + 0r^2 - 13r - 6}{r - 2}$ 26) _____

27) $\frac{4x^3 - 39x - 9}{x + 3}$ 27) _____

28) $\frac{3x^3 - 4x + 16}{x + 2}$ 28) _____

29) $\frac{-6x^3 - 7x^2 - 12x + 10}{3x - 1}$ 29) _____

30) $\frac{-15x^3 - 18x^2 - 8x + 5}{-5x - 1}$ 30) _____

31) $\frac{x^4 + 256}{x - 4}$ 31) _____

32) $\frac{x^4 + 81}{x - 3}$ 32) _____

Simplify the given expression.

33) $100^{1/2}$ 33) _____

34) $36^{1/2}$ 34) _____

35) $16^{1/4}$ 35) _____

36) $8^{1/3}$ 36) _____

37) $16^{1/4}$ 37) _____

38) $256^{1/4}$ 38) _____

39) $\left(\frac{1}{81}\right)^{1/2}$ 39) _____

40) $\left(\frac{1}{121}\right)^{1/2}$ 40) _____

41) $\left(\frac{529}{64}\right)^{1/2}$ 41) _____

42) $\left(\frac{64}{529}\right)^{1/2}$ 42) _____

43) $64^{4/3}$ 43) _____

44) $8^{4/3}$ 44) _____

45) $27^{-1/3}$ 45) _____

46) $343^{-1/3}$ 46) _____

47) $\left(\frac{1}{4}\right)^{-1/2}$ 47) _____

48) $\left(\frac{1}{16}\right)^{-1/2}$ 48) _____

Simplify the expression. Write the answer with positive exponents only. Assume that all variables represent positive real numbers.

49) $x^{1/8} \cdot x^{5/8}$ 49) _____

50) $x^{4/9} \cdot x^{2/9}$ 50) _____

51) $x^{3/2} \cdot x^{2/3}$ 51) _____

52) $x^{3/4} \cdot x^{2/3}$ 52) _____

53) $x^{2/3} \cdot x^{1/2}$ 53) _____

54) $\frac{x^{5/8}}{x^{2/8}}$ 54) _____

55) $\frac{x^{3/8}}{x^{2/8}}$ 55) _____

56) $(x^{10}y^{10})^{1/2}$ 56) _____

57) $(x^{10}y^{4})^{1/2}$ 57) _____

58) $(x^4y^8)^{1/2}$ 58) _____

59) $\frac{x^{1/8}}{x^{1/11}}$ 59) _____

60) $\frac{x^{1/6}}{x^{1/13}}$ 60) _____

61) $(x^8y^8)^{1/2}$ 61) _____

62) $\left(\frac{x^{1/5}}{y^{5/4}}\right)^2$ 62) _____

63) $\left(\frac{x^{3/4}}{x^{5/4} \cdot x^{7/4}}\right)^8$ 63) _____

1) {1}
2) {1}
3) {3}
4) $\left\{-\frac{7}{2}\right\}$
5) $\left\{-\frac{7}{3}\right\}$
6) {–27}
7) {–31}
8) ∅
9) ∅
10) ∅
11) ∅
12) ∅
13) ∅
14) ∅
15) ∅
16) $1\frac{7}{8}$ hours
17) $3\frac{15}{16}$ hours
18) $8\frac{4}{7}$ minutes
19) 15 minutes
20) baker: 25 minutes
assistant: 100 minutes
21) baker: 20 minutes
assistant: 80 minutes
22) baker: 30 minutes
assistant: 120 minutes
23) $2m^2 - 6m + 4$
24) $9m^2 - 6m + 3$
25) $3r^2 + 5r + 6$
26) $4r^2 + 8r + 3$
27) $4x^2 - 12x - 3$
28) $3x^2 - 6x + 8$
29) $-2x^2 - 3x - 5 + \frac{5}{3x - 1}$
30) $3x^2 + 3x + 1 + \frac{6}{-5x - 1}$
31) $x^3 + 4x^2 + 16x + 64 + \frac{512}{x - 4}$
32) $x^3 + 3x^2 + 9x + 27 + \frac{162}{x - 3}$
33) 10
34) 6
35) 2

36) 2
37) 2
38) 4
39) $\frac{1}{9}$
40) $\frac{1}{11}$
41) $\frac{23}{8}$
42) $\frac{8}{23}$
43) 256
44) 16
45) $\frac{1}{3}$
46) $\frac{1}{7}$
47) 2
48) 4
49) $x^{3/4}$
50) $x^{2/3}$
51) $x^{13/6}$
52) $x^{17/12}$
53) $x^{7/6}$
54) $x^{3/8}$
55) $x^{1/8}$
56) x^5y^5
57) x^5y^2
58) x^2y^4
59) $x^{3/88}$
60) $x^{7/78}$
61) x^4y^4
62) $\frac{x^{2/5}}{y^{5/2}}$
63) $\frac{1}{x^{18}}$