

## INDIVIDUAL ANSWERS

1. C
2. D
3. C
4. D
5. A
6. B
7. D
8. B
9. E
10. D
11. B
12. D
13. C
14. A
15. A
16. B
17. A
18. C
19. D
20. C
21. B
22. C
23. E
24. A
25. B
26. A
27. B
28. D
29. B
30. D

## TEAM ANSWERS

1.  $5/108$
2. 240
3. 262,201
4. -4
5. 1999
6.  $2x - 9y = -13$
7. 9
8. 5
9. 23
10. 0.66
11. 2
12. 6
13.  $2 < x < 4$
14. 5.24
15.  $3/7$

<p>1. C. <math>\frac{a}{b} = \frac{6}{11}; \frac{a-4}{b+6} = \frac{4}{9}</math>  <math>11a = 6b; 9a = 4b + 60</math>                      solve the system to get <math>a=36</math></p>	<p>2. D. Definition</p>
<p>3. C. <math>3^{x+1} - 3^x = 3^x(3-1)</math>   <math>= 2f(x)</math></p>	<p>4. D.  <math display="block">\frac{(x^2y^2 + x^2 + y^2 + 1) - (x^2y^2 - x^2 - y^2 + 1)}{xy}</math> <math display="block">\frac{2x^2 + 2y^2}{xy}</math></p>
<p>5. A. let <math>x = 2</math>  <math>16 - 72 + 36 - 9 = -29</math></p>	<p>6. B.</p>
<p>7. D. Center is at (10,-3)                      Semi-horizontal axis is 5.                      Semi-vertical axis is 2</p>	<p>8. B. Definition of a parabola</p>
<p>9. E. Counter examples:                      Addition (Two infinite non-repeating decimals)  <math>.101001000... + .010110111... = 1/9</math>                      Likewise for subtraction.  <math>\sqrt{8}\sqrt{2} = 4</math>  <math>\sqrt{8} / \sqrt{2} = 2</math></p>	<p>10. D. <math>(1+i)^{10} = (2i)^5 = 32i</math>  <math>(1-i)^8 = (-2i)^4 = 16</math></p>
<p>11. B. The graph is a square with a side of length <math>a\sqrt{2}</math>.</p>	<p>12. D. The discriminant is <math>(-19)^2 - (4)(99)</math>                      The value of the discriminant is <math>&lt; 0</math>.</p>
<p>13. C. <math>2000 = 1000(1.03)^{2n}</math>  <math>\log 2 = 2n(\log 1.03)</math>  <math>n = 11.72</math></p>	<p>14. A. Distance from (5,11) to (8,7)  <math>d = \sqrt{9+16}</math></p>

15. A.  $20 = a(1) + 5d$   
 $320 = a(1) + 9d$   
 $d = 75. a(12) = 320 + 150$

16. B. Infinite geometric series. First term is 1  
Common ratio is  $-3/4$ .  

$$S = \frac{1}{1 - \left(\frac{-3}{4}\right)} = \frac{4}{7}$$

17. A.  $x = \frac{y-1}{y+1}$ ; solve for y

18. C.  
 $(3x - 3x^3 - 3x^3) - (3x^2 - 3x^3 - 3x^2) = -18$   
 $x^3 - x - 6 = 0$   
2 is the only real solution...others are complex

19. D.  $\frac{x^3 + 3x^2h + 3xh^2 + h^3 - x^3}{h}$

20. C.  $(x-5)(x-3)(x-4) > 0$  so  $3 < x < 4$  or  $x > 5$   
since  $x-5$  is in the numerator,  $x$  can also = 5

21. B.  $4 = \frac{(k)(9)}{8}$ ; So,  $k = \frac{32}{9}$   
 $z = \frac{(32)(16)}{(9)(27)}$

22. C. Black jack/red  $\rightarrow \left(\frac{2}{52}\right)\left(\frac{26}{51}\right)$   
or red/black jack  $\rightarrow \left(\frac{26}{52}\right)\left(\frac{2}{51}\right) = \frac{2}{51}$

23. E. All situations listed are possible.

24. A.  $\frac{39}{99} = \frac{13}{33}$

25. B. Let  $a=b=c=1. (1+9-9+9)^4$

26. A. Solve the system  $6x + 8y = 4$   
 $7x + 9y = 2$   
 $(x,y) = (-10,8)$

27. B.  $\frac{\log 99}{\log 19} + \frac{\log 19}{\log 99} - 1$   
calculator exercise

28. D. When 19 to a power is divided by 5 the  
remainders alternate 4, 1, 4, 1...  
If the power is odd, the remainder is 4.

29. B.  $\frac{(x-3)^2}{4} + \frac{(y-2)^2}{3} = 1$   
Minor axis has length  $2\sqrt{3}$

30. D. The highest power...from the first factor  
is 12 and the second is 20. Total 32.