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

1. D $-1126+4(360)=-1126+1440=314$

2. B $1-none=\frac{31}{32}\to\frac{1}{32}=\left(\frac{1}{8}\bullet\frac{2}{5}\bullet\frac{5}{6}\bullet x\right)\to\frac{1}{32}=\frac{x}{24}\to x=\frac{3}{4}\to 1-\frac{3}{4}=\frac{1}{4}$

3. A $x^2-1>1\to x^2>2\to\left(-\infty-\sqrt{2}\right)\cup\left(\sqrt{2},\infty\right)$

4. B $\cos Y=\frac{5}{\sqrt{26}}\to\frac{5}{\sqrt{26}}=\frac{104+64-X^2}{4\sqrt{26}\bullet 8}\to 160=168-X^2$

   $X^2=8\to X=2\sqrt{2}$

5. E Infinite geometry series but absolute value of r is great than 1 so answer

6. C $\tan\left(\frac{\pi}{6}+\frac{3\pi}{4}\right)=\frac{\tan\frac{\pi}{6}+\tan\frac{3\pi}{4}}{1-\tan\frac{\pi}{6}\bullet\tan\frac{3\pi}{4}}=\frac{\frac{1}{\sqrt{3}}-1}{1+\frac{1}{\sqrt{3}}}=\frac{1-\sqrt{3}}{\sqrt{3}+1}\bullet\frac{\sqrt{3}-1}{\sqrt{3}-1}$

   $=\frac{-4+2\sqrt{3}}{2}=\sqrt{3}-2$

7. B Graph it and you can see it is a parabola that open left. The vertex is (0,8) with generic form $4p(x-h)=(y-k)^2$

8. D

	Y	*N*	*Total*		*Y*	*N*	*Total*
Y	$\frac{5}{12}$		$\frac{2}{3}$	*Y*	$\frac{2}{3}$	0	$\frac{2}{3}$
N	$\frac{1}{3}$	0	$\frac{1}{3}$	*N*			$\frac{1}{3}$
Total	$\frac{9}{12}$	$\frac{3}{12}$	1	*Total*	$\frac{9}{12}$	$\frac{3}{12}$	1

   The 2 extremes are listed

9. D $D=b^2-4ac\ge 0$

   $m^2-8n\ge 0\to 4n^2-4m\ge 0$

   $n^2\ge m\to n\le\frac{m^2}{8}=n^2\le\frac{m^4}{64}\to\frac{m^4}{64}=m\to m=4\to n=2\to 4+2=6$

10. B Draw yourself a picture and set RL=x and LU=y and the perpendicular from M to

    $x^2+y^2=9$

    $z^2+4=x^2$

    RU=z

    $z^2+1=y^2\to x^2-y^2=3\to 2x^2=12\to x^2=6\to x=\sqrt{6}$

    $y^2=3\to y=\sqrt{3}\to A=xy=\sqrt{18}=3\sqrt{2}$

11. A You have 2 scenarios here. n>0 and n<0. If n>0 you have x-intercepts of 4n and 2n and y-intercept of 2n so 8n=24 and n=3. If n<0 then you only have a y-intercept of 4n but since negative you get 4n=-24 so n=-6. Therefore 3-6=-3

12. D $\frac{700}{x}=\frac{x+300}{1100+x}\rightarrow x^2+300x=700(1100)+700x$

$x^2-400x-700(1100)=0\rightarrow(x-1100)(x+400)$

$x=1100\rightarrow 700+1100=1800$

13. C $3x+2y=28\rightarrow 4x-6y=12\rightarrow 9x+6y=84$

$13x=96\rightarrow x=\frac{96}{13}\rightarrow\frac{96}{13}-\frac{52}{13}=\frac{44}{13}\rightarrow\frac{44}{13}+\frac{96}{13}=\frac{140}{13}$

14. C $\frac{\frac{n(n+1)(2n+1)}{6}}{(n-2)^3}=\frac{1}{3}$

15. B $\cos x\cos y-\sin x\sin y=\frac{4}{5}\bullet\frac{-12}{13}-\frac{3}{5}\bullet\frac{-5}{13}=\frac{-33}{65}$

16. B $3x-5y=19\rightarrow\frac{-4--2}{5-3}=-1\rightarrow m=1\rightarrow x-y=7$

$(8,1)\rightarrow\sqrt{(8-3)^2+(1--2)^2}=\sqrt{34}\rightarrow 34\pi$

17. A $A+B+C+D=-2$

$8A+4B+2C+D=6$

$27A+9B+3C+D=26$

$64A+16B+4C+D=64\rightarrow n^3+n-4\rightarrow 1-0-1--4=4$

18. D $A=P\left(1+\frac{R}{N}\right)^{NT}\rightarrow 2=(1.06)^T\rightarrow\log_{1.06}2=T$

19. A $R-M=U-L=D$

$(R-M)(R+M)+(U-L)(U+L)=D(M+R+L+U)$

$D=3=U-L\rightarrow L-U=-3$

20. D $x^2+4x+4+y^2-8y+16=5+4+16$

$(x+2)^2+(y-4)^2=25\rightarrow(-2,4)\rightarrow\sqrt{12^2+5^2}=13$

$13-5=R\rightarrow D=2R=16$

21. A $g(x)=\frac{2x^3-x^2-15x+18}{x^2-4}=\left(\frac{(x-2)(x+3)(2x-3)}{(x-2)(x+2)}\right)=\left(\frac{(x+3)(2x-3)}{(x+2)}\right)$

$\left(2,\frac{5}{4}\right)\rightarrow x^2-4\overline{)2x^3-x^2-15x+18}\quad y=2x-1$

$\rightarrow\frac{5}{4}-1=\frac{1}{4}$

22. D $6x^{\frac{4}{5}}-11x^{\frac{2}{5}}+4=0\rightarrow\left(3x^{\frac{2}{5}}-4\right)\left(2x^{\frac{2}{5}}-1\right)=0$ two solutions for each for a total of 4

$x^{\frac{2}{5}}=\frac{4}{3}\rightarrow x^{\frac{2}{5}}=\frac{1}{2}$

23. A $2^5\left(2^5+1\right)=K^5\left(K^5+1\right)\rightarrow K^5=32,-33\rightarrow 32-33=-1$

24. D

1. midpoint $\left(2, \frac{-1}{2}\right)$ slope $\frac{3--4}{5--1} = \frac{7}{6} \rightarrow m = \frac{-6}{7} \rightarrow 6x + 7y = C$

$C = \frac{17}{2} \rightarrow 12x + 14y = 17$

12+14+17=43

25. D $\sqrt{14^2 + 18^2 + 21^2} = 31$ centers are 31 a part. Add each radius to this to get farthest distance 31+30=61

26. A $\begin{vmatrix} 4 & 3 & 2 & 17 \\ -1 & 2 & 3 & 0 \\ 0 & 0 & 4 & 2 \\ -2 & 0 & 0 & 0 \end{vmatrix} = \begin{vmatrix} 4 & 3 & 2 & 17 \\ -1 & 2 & 3 & 0 \\ 0 & 0 & 4 & 2 \\ -2 & 0 & 0 & 0 \end{vmatrix} = 2 \begin{vmatrix} 3 & 2 & 17 \\ 2 & 3 & 0 \\ 0 & 4 & 2 \end{vmatrix}$

$2\left[18 + 0 + 136 - (0 + 0 + 8)\right] = 2 \bullet 146 = 292$

27. E $ke + 2e = k - 2 \rightarrow k - ke = 2e + 2 \rightarrow k = \frac{2 + 2e}{1 - e}$ extraneous

28. C $x + 4 = y^2 - 4y + 4 \rightarrow x + 4 = (y - 2)^2 \rightarrow V = (-4, 2)$ a sideways parabola that has a vertex in Quadrant 2 and opens right. It goes through the origin and therefore covers every quadrant but 3

29. C

30. B This creates a 30,60, 90 degree triangle with a hypotenuse of 10 and a vertical side of 5 across from the 30 degree angle. Thus the bearing is 30 + 60 =90