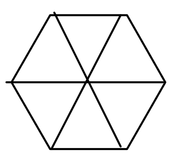
1. B	7. C	13. D	19. A	25. B
2. D	8. B	14. B	20. C	26. B
3. B	9. D	15. D	21. D	27. A
4. A	10. B	16. B	22. D	28. A
5. B	11. B	17. A	23. D	29. B
6. A	12. D	18. D	24. B	30. C

1. B. An odd function f has the property that f(x)= -f(-x). So a=0 and b= -4. a-b= 4.

2. D. $1.1 \cdot S = 0.2X$. So $S = \frac{2}{11}X$

3. B. Use the Pythagorean Theorem to get the missing side is $\sqrt{16-a^2}$ and the tanθ is this over a.

4. A. The longest diagonal is from a vertex straight across the hexagon. There are 3 of these, out of a total of 9 diagonals.



5. B. Square the first equation. $r + 2\sqrt{rs} + s = 9$ and since rs=1/9, $r + s = 9 - 2\left(\frac{1}{3}\right) = \frac{25}{3}$ and the square root of this is $\frac{5\sqrt{3}}{3}$.

6. A. The distance from the point (-1,4) to the directrix 3x-4y=4 is twice 1/(4p). Distance is $\left|\frac{3(-1)-4(4)-4}{\sqrt{3^2+4^2}}\right| = \frac{23}{5}$. So half of this is 23/10 and since this is 1/(4p), so p=5/46 and the length of the latus is 46/5.

7. C. Use the law of cosines: $39 = 36 + 9 - 2(18)\cos R$ which gives cosR= $\frac{1}{6}$.

8. B. $f(x) = 3(\cos 4x)$ and the period of this graph is $\frac{2\pi}{4}$,or pi/2..

9. D. We get factors by figuring out how many factors of 3 there are, since every second factor is even, and factors of 3 and 2 make factors of 6. So divide by 3 (33 factors) and then by 9 (11 factors) and then by 27 (3) and then by 81 (1) for a total of 48.

10. B. $C(6,3)\left(\frac{1}{2}x^2\right)^3(-2)^3 = -20x^6$.

11. B. Each vertex has one such cube.8/64=1/8.

12. D. $(2cis(-60))^4 = 16cis(-240)$ = $16cis120 = -8 + 8i\sqrt{3}$.

13. D. Consider t=3 which makes x undefined. At this time, y=1/3 is the asymptote. Consider y=0 which makes y undefined. This gives asymptote x=1/3.

14. B. $(a-4)(a+1) > 0$. Try intervals to get $-1 < a < 4$ and the least integer in this set is 0.

15. D. Let the areas be x, x+d and x+2d. The sum is 2x+3d which must be equal to the area of the square 36. Divide by 3 to get x+d=12, and x+d is the area of region y.

16. B. $\frac{1}{2} + 1 + \frac{3}{2} = 3$

17. A. The first distance is $\frac{120}{360}(22\pi) = \frac{22\pi}{3}$ and the sum of the infinite series is $\frac{\frac{22\pi}{3}}{1-\frac{3}{4}}$ = $\frac{88\pi}{3}$.

18. D. Factor out, in the denominator, 3^{-11} and you get $3^{-11}(3^{-10} + ... + 3)$ in the denominator and this cancels with the numerator and $\frac{1}{3^{-11}} = 3^{11}$.

19. A. 1(125)+1(25)+0+1=151 which is prime.

20. **C**. $\cos\theta + \dfrac{1}{\left(\dfrac{\sqrt{17}+1}{4}\right)} = \dfrac{\sqrt{17}+1}{4}$

$$\cos\theta + \frac{4}{\sqrt{17}+1} = \frac{\sqrt{17}+1}{4}$$

Rationalize to get

$$\cos\theta + \frac{\cancel{4}(\sqrt{17}-1)}{\cancel{16}\,4} = \frac{\sqrt{17}+1}{4}$$

so $\cos\theta = \dfrac{1}{2}$ and $\theta = \dfrac{\pi}{3}$.

21. **D**. The numbers are -7, -7+1, -7+2, … until the last -7+(k-1). The sum of these is -7 times 0+1+2+…+(k-1) which is -7(k-1)k/2 (use the sum of an arithmetic series). Divide by k for the average and we get -7/2 times (k-1), set it equal to 15/2 and we get k=30.

22. **D**. If the shared vertex is (0, 0, 0) then we get the distance from (1, 1, 1) and (3, 2, 5) which is $\sqrt{2^2+1^2+4^2}$ = $\sqrt{21}$

23. **D.** The rectangular form is $(x-4)^2+(y+3)^2=25$ so the area of the base of the cone is 25π. The height is 9 so $V=\dfrac{1}{3}\pi(25)9=75\pi$.

24. **B**.

$$\frac{(1-i)^2}{3+4i} = \frac{-2i}{3+4i} = \frac{-2i(3-4i)}{9+16} = \frac{-6i-8}{25}$$

$\dfrac{1}{25}\left|-6-8i\right| = \dfrac{1}{25}\sqrt{36+64}$ = 10/25 = 2/5.

25. **B**. Let the vertical rise be 4x, the horizontal be 3x and the road be 5x. Since the vertical must be 6 miles, we let 4x=6 and x=3/2 So the road distance must be 5(3/2) = 15/2 miles. TR=D, so 12T=15/2 and the time is 15/24 hour = 5/8 hour.

26. **B**. Square: $x^2-4x+4=9x^2$ and $8x^2+4x-4=0;\ 2x^2+x-1=0$ so (2x-1)(x+1)=0 and since 3x must be positive, x=1/2. Note: the left side of the equation may be reduced to $\sqrt{(x-2)^2}=\left|x-2\right|$ so you can also solve the equation $\left|x-2\right|=3x$.

27. **A**. $15x\left(\dfrac{1}{x}+\dfrac{1}{3}=\dfrac{2}{5}\right)$ = $15+5x=6x$, x=15.

28.

end of day…	snail 1	nite	snail 2
1st	4' high,	3'high	19.5'
2nd	7'high	6'high	19
3rd	10' high	9' high	18.5'
4th	13' high	12'	18'
5th	16'	15'	17.5
6th	19'	18'	17'
7th	22'		

By the end of the fifth day, you can see by the handy chart that snail 2 is still above snail 1 at 17.5' and 15'. The morning of the sixth day, the other snail overtakes the first. Answer **A**.

29. **B**. Draw a table with children numbers 1 to 10. You will see that numbers across from each other, when subtracted, always equal 5. Same with 12 children. The numbers subtract to 6. So 180-70=110 and that is half of the total children. 220 children.

30. **C**. Using $\dfrac{x^2}{1}-\dfrac{y^2}{4}=1$ we get c=$\sqrt{5}$ and this is the distance to the focus. So the width of our rectangle is $2\sqrt{5}$. Now use x=$\sqrt{5}$ in our equation gives $4(5)-y^2=4$ and $y=\pm4$ and our height for the rectangle is 8. Area is $16\sqrt{5}$ and 16+5=21.