

PC REVIEW

1. IF IT'S GEOMETRIC w/ $|r| < 1$, IT CONVERGES. OTHERWISE IT DIVERGES.

2. a) 8, 5, 2, -1, -4

b) $3(1-1)^2 = 0$
 $3(2-1)^2 = 3$
 $3(3-1)^2 = 12$
 $3(4-1)^2 = 27$
 $3(5-1)^2 = 48$

c) $\frac{4}{1+2} = \frac{4}{3}$
 $\frac{4}{2+2} = 1$
 $\frac{4}{3+2} = \frac{4}{5}$
 $\frac{4}{4+2} = \frac{4}{6} = \frac{2}{3}$
 $\frac{4}{5+2} = \frac{4}{7}$

3. a) $d = 6$ $a_1 = -7$
 $a_n = -7 + (n-1)6$
 $a_n = -7 + 6n - 6$
 $a_n = -13 + 6n$

b) $r = 2$ $a_1 = 3$
 $a_n = 3(2)^{n-1}$

c) $a_7 = a_4(r)^3$
 $3645 = 135r^3$
 $27 = r^3$
 $3 = r$

$a_4 = a_1(3)^3$
 $135 = a_1(27)$
 $a_1 = 5$
 $a_n = 5(3)^{n-1}$

4. a) $\sum_{n=1}^{\infty} -13 + 6n$
 (DIVERGES)

b) $\sum_{n=1}^9 3(2)^{n-1}$
 $768 = 3(2)^{n-1}$
 $256 = 2^{n-1}$
 $\log_2 256 = n-1$
 $8 = n-1$
 $9 = n$

c) $\sum_{n=1}^7 5(3)^{n-1}$

5. a) ARITH, CONVERGE
 $a_n = 17 + (n-1)(10)$
 $417 = 17 + (n-1)(10)$
 $40 = n-1$
 $41 = n$
 $S_{41} = \frac{41}{2}(17+417)$
 $= 8897$

b) GEOM, DIVERGE
 $r = 2 > 1$

c) GEOM, CONVERGE
 $r = -\frac{1}{2}$
 $S_{\infty} = \frac{6}{1 + \frac{1}{2}} = \frac{6}{\frac{3}{2}} = 4$

6. a) PARABOLA

b) $(x^2 + x + \frac{1}{4}) + (y^2 - 2y + 1) = 8 + \frac{1}{4} + 1$
 $(x + \frac{1}{2})^2 + (y - 1)^2 = 9.25 + 1$
CIRCLE

c) HYPERBOLA
 (BECAUSE ONE OF THE SQUARED TERMS IS NEGATIVE)

d) $3x^2 + x + 4y^2 - 2y = 8$
 $3(x^2 + \frac{1}{3}x + \frac{1}{36}) + 4(y^2 - \frac{1}{2}y + \frac{1}{16}) = 8 + \frac{1}{36} + \frac{1}{4}$
ELLIPSE

7. SEE GRAPH PAPER
 $-4x - 4 = -y^2$
 $4x - 4 = y^2$
 $4(x-1) = y^2$ $x-p=1$
 V: (1, 0)
 F: (2, 0)
 D: $x=0$
 AOS: $y=0$

8. SEE GRAPH PAPER
 $(x^2 - 2x + 1) + (y^2 + 6y + 9) = -40 + 1 + 9$
 $(x-1)^2 + (y+3)^2 = 25$
 C: (1, -3) $\sqrt{25} = 5$
 r: 5

9. $C: (0, 2)$ $c^2 = 25 - 4$
 $V: (0, 7), (0, -3)$ $c = \sqrt{21}$
 $F: (0, 2 + \sqrt{21}), (0, 2 - \sqrt{21})$
 $E: \frac{\sqrt{21}}{5}$

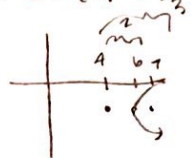
10. $C: (0, -1)$ $c^2 = 25 + 16$
 $V: (0, 4), (0, -6)$ $c = \sqrt{41}$
 $F: (0, -1 + \sqrt{41}), (0, -1 - \sqrt{41})$
 $A: y = \frac{5}{4}x - 1$ $y = -\frac{5}{4}x - 1$
 $E: \frac{\sqrt{41}}{5}$

11. $(x-3)^2 + (y-7)^2 = r^2$
 $d = \frac{(3,7)(1,-3)}{\sqrt{(3-1)^2 + (7+3)^2}}$
 $= \sqrt{2^2 + 10^2}$
 $= \sqrt{104} = r$
 $(x-3)^2 + (y-7)^2 = 104$

12. $4p(x+7) = (y+5)^2$
 @ $(2, -1)$ $4p(2+7) = (-1+5)^2$
 $4p(9) = 4^2$
 $36p = 16$
 $p = \frac{4}{9}$ $\rightarrow \frac{16}{9}(x+7) = (y+5)^2$

13. $C: (0, 0)$ $\frac{x^2}{64} + \frac{y^2}{39} = 1$ $c^2 = a^2 - b^2$
 $25 = 64 - b^2$
 $39 = b^2$

14. $C: (4, -2)$ $\frac{(x-4)^2}{4} - \frac{(y+2)^2}{5} = 1$ $c^2 = a^2 + b^2$
 $3^2 = 4 + b^2$
 $5 = b^2$



15. $-\infty$

16. ∞

17. TOP WINS SO NO HA ∞

18. $\frac{(x+3)(x+10)}{(x+8)(x+10)} \rightarrow \frac{-10+3}{-10+8} = \frac{-7}{-2} = \frac{7}{2}$

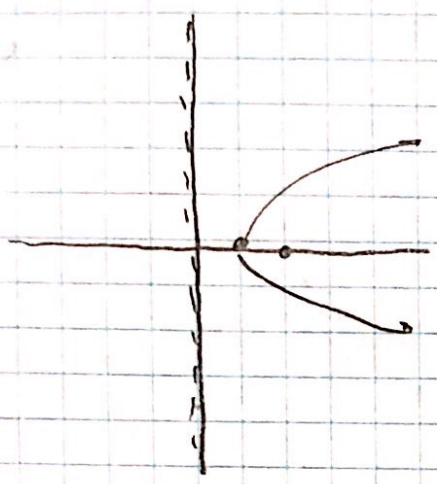
19. -2

20. 0

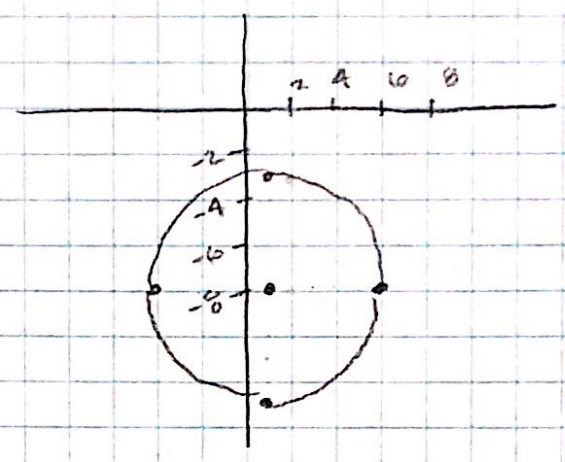
21. ∞

22. (a) 5 (b) 2 (c) DNE (d) DNE
 (e) 3 (f) 3 (g) 3 (h) 1

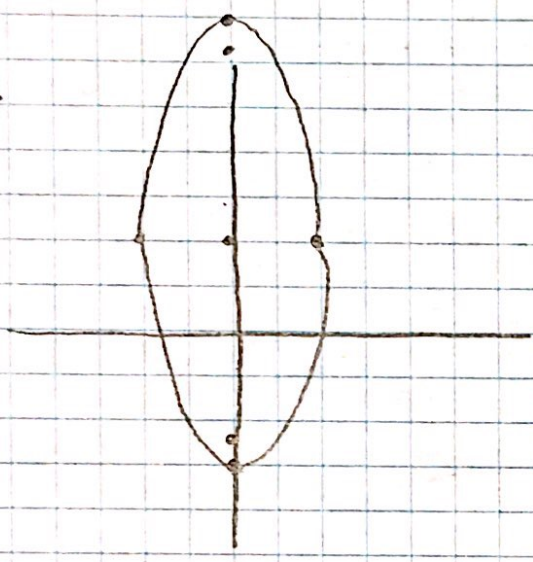
7.



8.



9.



10.

