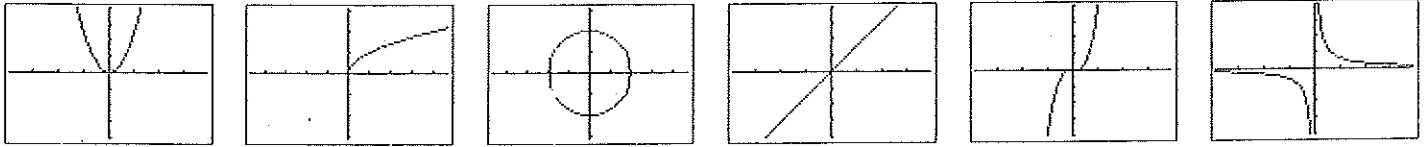


This side: NO CALCULATOR

PART 1: State the parent function for each graph shown below

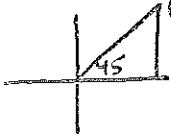


1. x^2 2. \sqrt{x} 3. $x^2 + y^2 = r^2$ 4. x 5. x^3 6. $\frac{1}{x}$

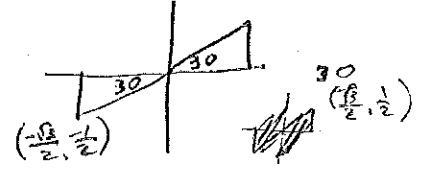
PART 2: Consider the function $f(x) = \frac{2}{x+1}$

7. What is the parent function? $\frac{1}{x}$
8. State the Domain: $x \neq -1$
9. Where are the potential vertical asymptotes? at $x = -1$
10. Are they asymptotes or holes? How do you know?
asymptotes Yes cannot remove
11. Do any horizontal asymptotes exist? Where? yes $y = 0$
12. State the end behavior as $x \rightarrow \infty$ $y \rightarrow 0$

PART 3: STATE THE FOLLOWING AS RADICALS



13. $\sin 45 = \frac{\sqrt{2}}{2}$ * 14. $\cos 210 = -\frac{\sqrt{3}}{2}$



15. Convert 315 degrees to radians: $\frac{7}{4}\pi$ $\frac{d}{360} = \frac{r}{2\pi}$

16. State 2 radians between 0 and 2π in which the sine is equal to $\frac{\sqrt{3}}{2}$
~~30 and 150~~ 60 120
 $\frac{1}{3}\pi$ $\frac{2}{3}\pi$

PART 4: FIND THE ZEROS FOR THE QUADRATIC

17. $f(x) = x^2 - 4x - 5$ $\frac{4 \pm \sqrt{16 - 4(1)(-5)}}{2(1)}$ $\frac{4+6}{2} = 5$ $\frac{4-6}{2} = -1$

PART 5: Line AB has points A = (2,1) and B = (4, -7)

18. State the slope of AB: -4
19. State the equation of AB in point slope form: $y - 1 = -4(x - 2)$ or $y + 7 = -4(x - 4)$
20. State the equation of AB in $y = mx + b$ form: $y = -4x + 9$

THIS SIDE: CALCULATOR IS ALLOWED

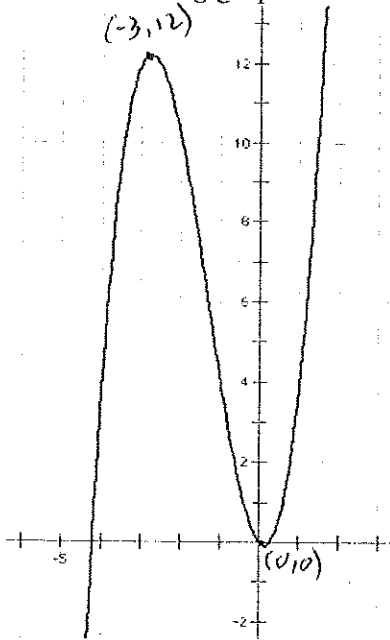
21. Find all critical points on $y = 2x^3 + x^2 - 3x$ as ordered pairs and state if they are minimum or maximum values.

Max: $(-0.89, 2.1)$ Min: $(.56, -1.0)$

22. Solve $4\ln(x+2) - 1 = 0$ for all real values of x.

$(-0.72, 0)$

Use the following graph to answer questions 23-25



23. State the end behavior of the function.

$x \rightarrow \infty \quad y \rightarrow +\infty$

$x \rightarrow -\infty \quad y \rightarrow -\infty$

24. State if each represents an even or odd degree function

odd

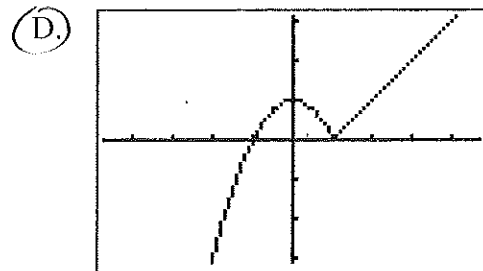
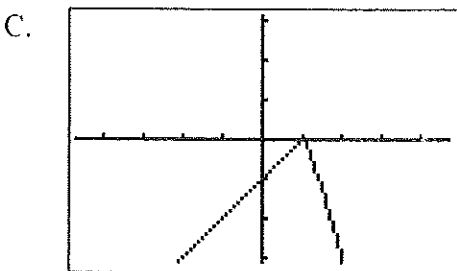
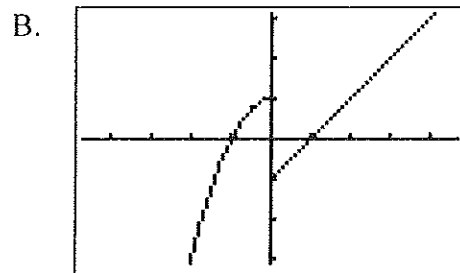
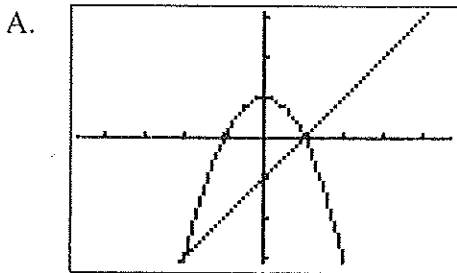
25. State the intervals of increasing and decreasing for the graphs above

INC: $(-\infty, -3] \cup [0, \infty)$

DEC: $[-3, 0]$

26. Which of the following is the graph of $g(x)$

$$g(x) = \begin{cases} -x^2 + 1 & \text{if } x \leq 1 \\ x - 1 & \text{if } x > 1 \end{cases}$$



27. State any points of discontinuity for the graph in problem 26

- A. $x = -1$ B. $x = 0$ C. $x = 1$ **(D)** the graph is continuous for all x values