

PRE-CALCULUS SUMMER REVIEW

Please complete each of the following problems ON A SEPARATE PIECE OF PAPER! If you do not know how to do a problem, look it up in the Pre-Calculus book, in old notes or an old book. You should have the entire packet done the first day of school. There will be a test covering all material in this packet within the first few days of school.

DO NOT USE A CALCULATOR All problems can be done without a calculator.

** Solutions are included. DO NOT JUST COPY FROM SOLUTIONS!! Use them to let you know if you understand the problem or not. You may also use them to guide you in the right direction. Remember: You will be tested on these problems. It does you no good to copy the answers when you do not know the procedure for solving the problem.

Convert to interval notation.

1. $x < 5$ 2. $x \geq -16$ 3. $-4 \leq x \leq 10$ 4. $7 < x \leq 20$

a) Convert to inequality notation. b) Graph each on a number line. c) Find the endpoints. d) State whether the interval is bounded or unbounded and its type.

5. $(-2, 5)$ 6. $(-\infty, 10]$

Simplify the expression.

7. $\frac{x^4 y^3}{x^2 y^5}$ 8. $\frac{(x^{-3} y^2)^{-4}}{(y^7 x^{-5})^{-2}}$ 9. $\frac{4a^3 b}{a^2 b^3} \cdot \frac{3b^2}{2a^2 b^4}$

Write the number in scientific notation.

10. The mean distance from Jupiter to the Sun is about 483,900,000 miles.
11. The electrical charge, in coulombs, of an electron is about -0.000 000 000 000 000 16.

Write the number in decimal form.

12. 3.489×10^{-6}
13. Name the quadrant in which each point lies. a) $(-7, -15)$ b) $(-1, 5)$ c) $(5, -9)$

Find a) the distance between the points and b) the midpoint.

14. -9.3 & 10.6

15. $(-3, -1)$ & $(5, -12)$

16. $\left(\frac{-7}{3}, \frac{3}{4}\right)$ & $\left(\frac{5}{3}, \frac{-9}{4}\right)$

17. Find the perimeter and area of the figure determined by the points. $(-5, 3)$, $(0, -1)$, $(4, 4)$

18. Draw a scatter plot of the data given in the table. Label the scatter plot clearly.

<i>Year</i>	1996	1997	1998	1999	2000	2001	2002	2003
<i>U.S. Imports</i> (billions of dollars)	74.3	85.9	94.9	109.7	135.9	131.3	134.6	138.1

Solve the equation or inequality.

19. $2(3-4x)-5(2x+3)=x-17$

20. $\frac{2x-3}{4}+5=3x$

21. $2 < x+6 \leq 9$

22. $-8x+18 \leq 36$

23. $|3-5x|+8=12$

24. $|2x+8| < 20$

25. $|5x-20| \geq 10$

Solve using the square root method.

26. $x^2=16$

27. $(x+6)^2=8$

Solve by factoring.

28. $5x^2-20x=0$

29. $2x^2-5x-7=0$

30. $x^2+18x=-32$

31. $x^3-7x^2+3x-21=0$

32. Solve using the quadratic formula. $x^2+8x=2$

Simplify each expression. Write in standard form.

33. $(9-18i)-(12+30i)$

34. $(7-8i)(12+9i)$

35. $\frac{4+5i}{2-3i}$

Simplify.

36. $\sqrt{-36}$


37. $\sqrt{-180}$

SOLUTIONS

NOTE: Give exact answers, not rounded, whenever possible.

1. $(-\infty, 5)$ 2. $[-16, \infty)$ 3. $[-4, 10]$ 4. $(7, 20]$

5. a) $-2 < x < 5$ b)  c) endpoints: -2, 5 d) bounded

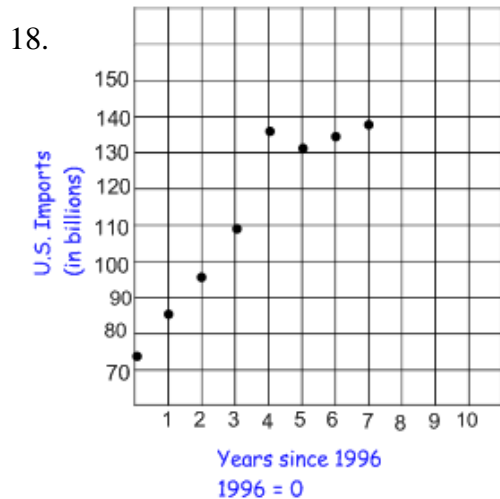
6. a) $x \leq 10$ b)  c) endpoint: 10 d) unbounded

7. $\frac{x^2}{y^2}$ 8. x^2y^6 9. $\frac{6}{ab^4}$ 10. 4.839×10^8 11. -1.6×10^{-19}

12. 0.000003489 13. a) III b) II c) IV 14. Distance: 19.9, midpoint: 0.65

15. Dist: $\sqrt{185}$ Midpt: $(1, -6.5)$ 16. Dist: 5 Midpt: $\left(-\frac{1}{3}, -\frac{3}{4}\right)$

17. $P = 2\sqrt{41} + \sqrt{82} \approx 21.86$, $A = 20.5$



19. $\frac{8}{19}$ 20. 1.7 21. $-4 \leq x < 3$

22. $x \geq -2.25$ 23. $-\frac{1}{5}, \frac{7}{5}$

24. $-14 < x < 6$ 25. $x \leq 2$ or $x \geq 6$

26. $x = \pm 4$ 27. $x = -6 \pm 2\sqrt{2}$

28. 0, 4 29. $\frac{7}{2}, -1$ 30. -2, -16 31. $7, \pm i\sqrt{3}$ 32. $-4 \pm 3\sqrt{2}$

33. $-3 - 48i$ 34. $156 - 33i$ 35. $\frac{-7 + 22i}{13}$ 36. $6i$ 37. $6i\sqrt{5}$