

Name _____ Summer 2025

1) Round to the indicated place.

a) 9.3113 *thousandths*

b) 6.9488 *tenths*

c) 1.495885 *thousandths*

d) 82.121 *hundredths*

2) Multiply. (No calculator)

a)
$$\begin{array}{r} 12475 \\ \times 123 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 1568 \\ \times 2567 \\ \hline \end{array}$$

3) Divide. (No Calculator)

a)
$$58 \overline{)148927}$$

b)
$$8 \overline{)7896847}$$

4) Evaluate.

a) $6 - \frac{1}{6}$

b) $(-\frac{4}{5}) - \frac{7}{8}$

c) $(-\frac{10}{7}) + \frac{1}{6}$

d) $\frac{9}{5} + \frac{4}{3}$

e) $2\frac{4}{5} + \frac{5}{8}$

f) $\frac{1}{3} - (-\frac{5}{2})$

g) $-\frac{5}{4} \cdot \frac{1}{3}$

h) $-1\frac{1}{4} \bullet -\frac{2}{3}$

i) $-\frac{1}{5} \div \frac{7}{4}$

j) $\frac{1}{2} \div \frac{8}{7}$

$$\text{k) } \left(\frac{3}{5}\right)\left(\frac{8}{17}\right) - \left(\frac{4}{5}\right)\left(\frac{15}{17}\right)$$

$$\text{l) } \left(\frac{-2}{3}\right)\left(\frac{5}{8}\right) + \left(\frac{-7}{8}\right)\left(\frac{-1}{3}\right)$$

5) Simplify.

$$\text{a) } \frac{9}{24}$$

$$\text{b) } \frac{100}{16}$$

$$\text{c) } \frac{5}{15}$$

$$\text{d) } \frac{27}{30}$$

6) Solve.

$$\text{a) } \frac{3}{x+1} = \frac{2}{x-4}$$

$$\text{b) } \frac{2}{x} = \frac{x}{x^2-8}$$

7) Find the equation of the line given...

a) $m = -\frac{2}{3}$ through (4, -1)

b) $m = \frac{1}{7}$ through (-3, -8)

c) through (-3, 6) and (-2, 4)

d) through (-1, 8) and (7, -3)

8) Solve.

a)
$$\begin{aligned} x + y &= 2 \\ y &= 2x + 5 \end{aligned}$$

b)
$$\begin{aligned} 3x - 2y &= 10 \\ 5x + 3y &= -15 \end{aligned}$$

9) Factor completely.

a) $2x^2y^2 - 26xy^2 + 80y^2$

b) $x^2 - 25$

c) $x^2 - 15x + 26$

d) $x^2 + 7x - 18$

e) $2x^2 + x - 6$

f) $3x^2 - 17x - 6$

g) $3z^2 - 16z - 12$

h) $5x^2 - 3x - 2$

10) Solve by factoring.

a) $t^2 + 15t + 26 = 0$

b) $x^2 - 2x - 15 = 0$

c) $2x^2 + 11x + 12 = 0$

d) $5x^2 + 9x - 2 = 0$

e) $3x^2 + 13x - 10 = 0$

f) $2x^2 - 9x - 35 = 0$

g) $7a^2 + 53a + 28 = 0$

h) $9k^2 + 66k + 21 = 0$

i) $5x^2 - 18x + 9 = 0$

j) $4x^2 - 15x - 25 = 0$

11) Solve by using the Quadratic Formula.

a) $x^2 - 10x + 21 = 0$

b) $2x^2 - 8x = -16$

c) $x^2 - x + 7 = 0$

d) $x^2 = 6x - 2$

12) Solve by Completing the Square.

a) $x^2 - 2x - 8 = 0$

b) $2x^2 = -9x + 3$

13) Solve by taking the roots.

a) $x^2 - 16 = 0$

b) $5y^2 - 10 = 115$

c) $5y^2 - 5 = 19 - y^2$

d) $x^2 - 12 = 52$

14) Perform the indicated operation.

a) $(3x^3 - x^2 + 4) + (2x^3 + x^2 + 2x)$

b) $(4x^3 + 3x^2 - x + 12) - (5x^3 - 3x^2 + x - 2)$

c) $(x + 1)(2x^2 - x + 1)$

d) $(2x^2 + 3x - 6)(x^2 + x - 4)$

15) Divide. Use Long Division.

a) $(2x^2 - 19x + 24) \div (x - 8)$

b) $(2x^3 + x^2 + 1) \div (x + 1)$

16) Divide. Use Synthetic Division.

a) $(x^3 - 28x - 48) \div (x + 4)$

b) $(x^4 - 10x^2 + 2x + 3) \div (x - 3)$

17) Simplify.

a) $\sqrt{420x^2y^3}$

b) $\sqrt{210xy^7}$

c) $\sqrt[3]{-8x^3y^3z^3}$

d) $\sqrt{98} + \sqrt{2}$

18) Rationalize the Denominator.

a) $\frac{5}{\sqrt{2}}$

b) $\frac{6}{5-\sqrt{7}}$

c) $\frac{3+\sqrt{2}}{4-\sqrt{8}}$

d) $\frac{3}{7-i}$

e) $\frac{2+i}{2-i}$

f) $\frac{6+i}{2i}$

g) $\sqrt{\frac{1}{3}}$

h) $\sqrt{\frac{5}{8}}$

19) Simplify.

a) $\frac{x^4 y^4}{x^{-4} y^{-4}}$

b) $\frac{xy}{3}(xy)^{-1}$

c) $\frac{x^2 y^3}{y^{-4}} \cdot \frac{y^4}{x^{-2} y^{-3}}$

d) $\frac{c^3 \cdot c^2 \cdot c}{c^{-1}}$

e) $(3x)^3$

f) $\frac{4x^4}{x^5} \cdot \frac{x}{-2}$

g) $\frac{\frac{5}{x}}{\frac{x^3}{35}}$

h) $\sqrt[3]{-64}$

i) $81^{\frac{1}{2}}$

j) $(-27)^{-\frac{2}{3}}$

k) $(\frac{1}{216})^{-\frac{1}{3}}$

l) $(\frac{4xy^{-1}}{16xy^2})^{-1}$

20) Simplify.

a) $\log 1000$

b) $\log_5 3125$

c) $\log_2 16$

d) $\log_{12} 1$

e) $\log_3 81$

f) $\log_2 8$

g) $\log_6 216$

h) $\ln e^2$

21) Solve. Remember to check for extraneous solutions.

a) $\log_2 4x = 5$

b) $2\log_2 x + 3\log_2 2 = 7$

22) Perform the indicated operation.

a) $\frac{3x-5}{x^2-9} + \frac{1}{x+3}$

b) $\frac{3y-5}{2y-6} - \frac{4y-2}{5y-15}$

c) $\frac{2x^2-6x}{x^2+x-12} \cdot \frac{9x-27}{x^2-9}$

d) $\frac{x^3-3x^2}{3x+6} \div \frac{x^3-8x^2+15x}{6x^2-18x-60}$

23) Solve using the graphing calculator.

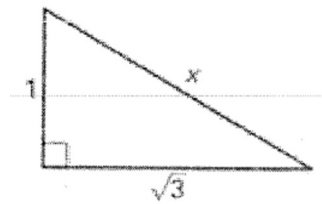
Given the equation $y = x^3 - 10x^2 + 13$. Calculate the following:

a) Relative Maximum

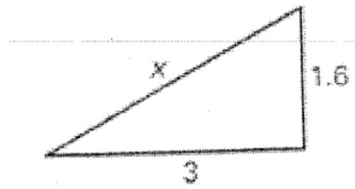
b) Relative Minimum

24) Find the unknown side length. (Pythagorean Theorem)

a)

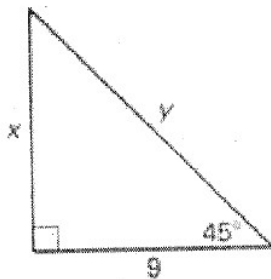


b)

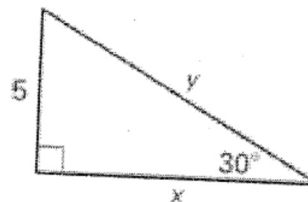


25) Find the value of each variable. Give answer in simple radical form. (You may have to go through your geometry notes and review special right triangles.)

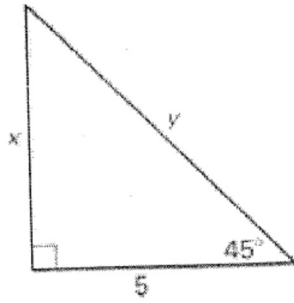
a)



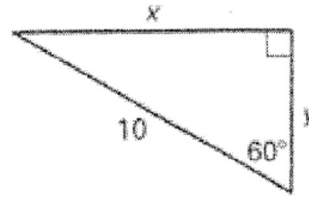
b)



c)

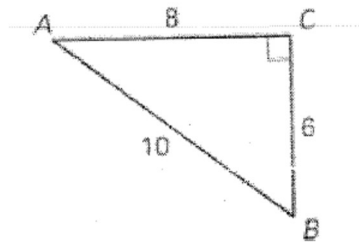


d)

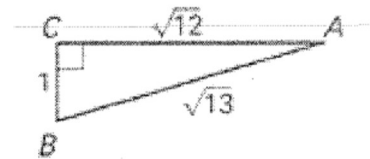


26) Find the sine, the cosine and the tangent of angle A. Express answers in simple radical form.

a)

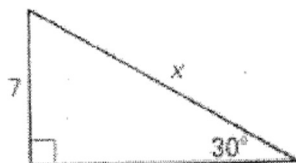


b)

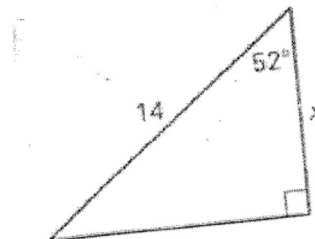


27) Use trigonometric ratios to find the value of each variable. Round answers to the nearest hundredth.

a)



b)



28) Find the sine, cosine, and tangent of the angle whose terminal ray passes through the given point. Give exact answers and be sure to simplify all your answers fully.

a) $(2, 5)$

b) $(-3, 4)$

c) $(6, -5)$

d) $(-3, -5)$

29) Without a calculator evaluate each of the following (hint: you'll need to use the unit circle and your 30-60-90 / 45-45-90 triangles)

a) $\sin(120^\circ)$

b) $\cos\left(\frac{7\pi}{4}\right)$

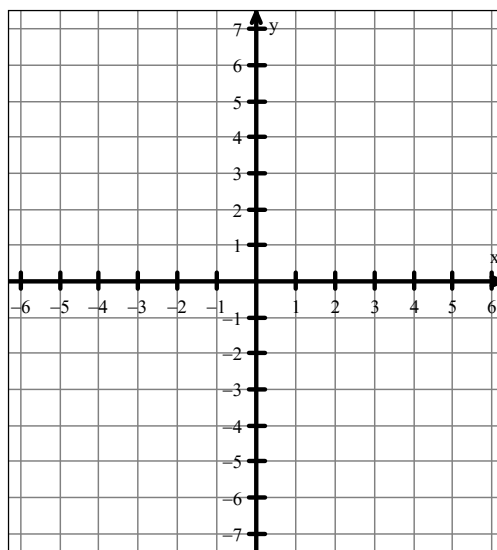
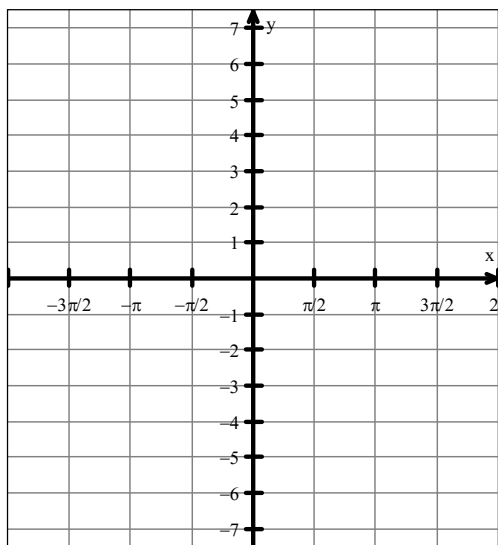
c) $\tan\left(\frac{5\pi}{6}\right)$

d) $\sin\left(\frac{11\pi}{6}\right)$

30) Find the amplitude and period and sketch the graph.

a) $y = 3\sin(2x) - 1$

b) $y = -2\cos\left(\frac{\pi}{2}x\right)$



Pre-calculus CP2 summer work answers.

- 1) a) 9.311 b) 6.9 c) 1.496 d) 82.12
- 2) a) 1,534,425 b) 4,025,056
- 3) a) $2567\frac{41}{58}$ b) $987,105\frac{7}{8}$
- 4) a) $\frac{35}{6}$ b) $-\frac{67}{40}$ c) $-\frac{53}{42}$ d) $\frac{47}{15}$
 e) $\frac{137}{40}$ f) $\frac{17}{6}$ g) $-\frac{5}{12}$ h) $\frac{5}{6}$
 i) $-\frac{4}{35}$ j) $\frac{7}{16}$ k) $-\frac{36}{85}$ l) $-\frac{1}{8}$
- 5) a) $\frac{3}{8}$ b) $\frac{25}{4}$ c) $\frac{1}{3}$ d) $\frac{9}{10}$
- 6) a) 14 b) ± 4
- 7) a) $y = -\frac{2}{3}x + \frac{5}{3}$ b) $y = \frac{1}{7}x - \frac{53}{7}$ c) $y = -2x$ d) $y = -\frac{11}{8}x + \frac{53}{8}$
- 8) a) (-1, 3) b) (0, -5)
- 9) a) $2y^2(x-8)(x-5)$ b) $(x+5)(x-5)$ c) $(x-13)(x-2)$ d) $(x+9)(x-2)$
 e) $(2x-3)(x+2)$ f) $(3x+1)(x-6)$ g) $(3z+2)(z-6)$ h) $(5x+2)(x-1)$
- 10) a) -13, -2 b) 5, -3 c) $-\frac{3}{2}, -4$ d) $\frac{1}{5}, -2$
 e) $\frac{2}{3}, -5$ f) $-\frac{5}{2}, 7$ g) $-\frac{4}{7}, -7$ h) $-\frac{1}{3}, -7$
 i) $\frac{3}{5}, 3$ j) $-\frac{5}{4}, 5$
- 11) a) 7, 3 b) $2 \pm 2i$ c) $\frac{1 \pm 3i\sqrt{3}}{2}$ d) $3 \pm \sqrt{7}$
- 12) a) 4, -2 b) $\frac{-9 \pm \sqrt{105}}{4}$
- 13) a) ± 4 b) ± 5 c) ± 2 d) ± 8
- 14) a) $5x^3 + 2x + 4$ b) $-x^3 + 6x^2 - 2x + 14$ c) $2x^3 + x^2 + 1$ d) $2x^4 + 5x^3 - 11x^2 - 18x + 24$
- 15) a) $2x - 3$ b) $2x^2 - x + 1$
- 16) a) $x^2 - 4x - 12$ b) $x^3 + 3x^2 - x - 1$
- 17) a) $2xy\sqrt{105y}$ b) $y^3\sqrt{210xy}$ c) $-2xyz$ d) $8\sqrt{2}$
- 18) a) $\frac{5\sqrt{2}}{2}$ b) $\frac{5+\sqrt{7}}{3}$ c) $\frac{8+5\sqrt{2}}{4}$ d) $\frac{21+3i}{50}$
 e) $\frac{3+4i}{5}$ f) $\frac{-6i+1}{2}$ g) $\frac{\sqrt{3}}{3}$ h) $\frac{\sqrt{10}}{4}$
- 19) a) x^8y^8 b) $\frac{1}{3}$ c) x^4y^{14} d) c^7
 e) $27x^3$ f) -2 g) $\frac{175}{x^4}$ h) -4
 i) 9 j) $\frac{1}{9}$ k) 6 l) $4y^3$
- 20) a) 3 b) 5 c) 4 d) 0
 e) 4 f) 3 g) 3 h) 2
- 21) a) 8 b) 4
- 22) a) $\frac{4x-8}{x^2-9}$ b) $\frac{7}{10}$ c) $\frac{18x}{(x+4)(x+3)}$ d) $2x$
- 23) a) (0, 13) b) $(\frac{20}{3}, -135.148)$ 24) a) 2 b) 3.4
- 25) a) $x = 9; y = 9\sqrt{2}$ b) $x = 5\sqrt{3}; y = 10$ c) $x = 5; y = 5\sqrt{2}$ d) $x = 5\sqrt{3}; y = 5$
- 26) a) $\sin A = \frac{3}{5}, \cos A = \frac{4}{5}, \tan A = \frac{3}{4}$ b) $\sin A = \frac{\sqrt{13}}{13}, \cos A = \frac{2\sqrt{39}}{13}, \tan A = \frac{\sqrt{3}}{6}$
- 27) a) 14 b) 8.6
- 28) a) $\sin \theta = \frac{5\sqrt{29}}{29}, \cos \theta = \frac{2\sqrt{29}}{29}, \tan \theta = \frac{5}{2}$ b) $\sin \theta = \frac{4}{5}, \cos \theta = -\frac{3}{5}, \tan \theta = -\frac{4}{3}$
 c) $\sin \theta = -\frac{5\sqrt{61}}{61}, \cos \theta = \frac{6\sqrt{61}}{61}, \tan \theta = -\frac{5}{6}$ d) $\sin \theta = -\frac{5\sqrt{34}}{34}, \cos \theta = -\frac{3\sqrt{34}}{34}, \tan \theta = \frac{5}{3}$
- 29) a) $\frac{\sqrt{3}}{2}$ b) $\frac{\sqrt{2}}{2}$ c) $-\frac{\sqrt{3}}{3}$ d) $-\frac{1}{2}$