

Problems for a Pretest

1. What is the equation of the line in Figure P.1?

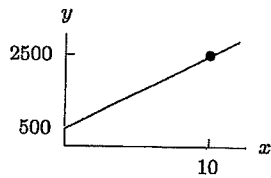


Figure P.1

2. What is the value of a in Figure P.2?

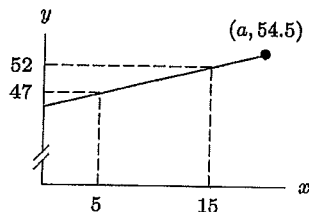


Figure P.2

3. Find a_1 and a_2 from Figure P.3.

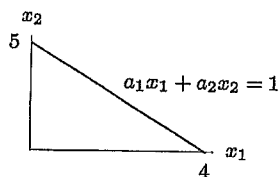


Figure P.3

4. Match each of the four lines in Figure P.4 with one of the slopes 0, 1, 2, -1, -2.

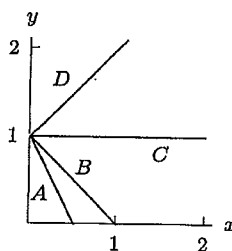


Figure P.4

5. Solve for P_0 :

$$P = P_0 \left(1 + \frac{r}{n}\right)^t$$

6. Solve for r :

$$P = \left(1 + \frac{r}{n}\right)^t$$

7. If $f(t) = 4t + (t + 3)^2$, find $f(0)$.
 8. If $f(x) = 4x + 28$, solve $f(x) = 0$.
 9. Which of the following is equivalent to $16 - x^2 + 6x$?
 (a) $7 + (3 - x)^2$
 (b) $16 - (x - 3)^2$
 (c) $25 - (x - 3)^2$
 (d) $52 - (x - 6)^2$
 (e) $25 - (x + 3)^2$
 (f) None of the above

10. What are the coordinates of the point Q in Figure P.5?
 11. What are the coordinates of the point P in Figure P.5?

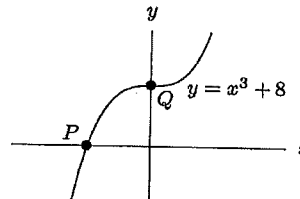


Figure P.5

12. Find $|-10| + |10|$.
 13. Which of the following is equivalent to $\frac{T}{E} + E$?

- (a) $\frac{E^2 + T}{E}$
 (b) $\frac{E^2 + T}{E + T}$
 (c) $\frac{E + T}{T + E}$
 (d) $\frac{E + 1}{T + E}$
 (e) $\frac{T + E}{E}$

14. Which of the following is equivalent to $\frac{1}{y} + \frac{1}{u}$?

- (a) $\frac{1}{uy}$
 (b) $\frac{1}{u + y}$
 (c) $\frac{u + y}{uy}$
 (d) $\frac{u}{y}$
 (e) $\frac{2}{y + u}$

15. Which of the following is equivalent to $x^{-1}y + y^{-1}x$?

- (a) $\frac{xy}{x^2 + y^2}$
- (b) $\frac{x^2 + y^2}{xy}$
- (c) $\frac{xy}{x + y}$
- (d) $\frac{x + y}{xy}$
- (e) $\frac{y + x}{x + y}$

16. If $\frac{\sqrt[3]{t}}{t} = t^a$, what is a ?

17. Simplify $(x^2x^5)^4$.

18. Simplify $W^{2/3}W^{3/2}$.

19. Expand and collect like terms: $-5u\left(\frac{3}{u} - 2v\right)$.

20. Solve $3p + 4 = 9$ for p .

21. Solve $2x + a = 5(1 - x)$ for x .

22. Solve $2\sqrt{w} - 3 = 9$ for w .

23. Solve $\frac{2}{3} = \frac{5}{n}$ for n .

24. Solve $Cq + Dq = A$ for q .

25. With $m = 2, x_0 = 3, y_0 = 10$, solve $y - y_0 = m(x - x_0)$ for x .

26. Find the value of x when $y = 0$ if $-2x + 9y - 9 = 0$.

27. Find the value of s when $t = s + 1$ if $3s - 8t = 7$.

28. Factor $12x^2 - 6a^2x$.

29. Factor $C^2a^3b - Cab^3$.

30. Which of the following is the factored form of $x^2 + 2x - 15$?

- (a) $(x + 1)^2 - 16$
- (b) $(x - 3)(x + 5)$
- (c) $x(x + 2) - 15$
- (d) $(x + 2)(x - 15)$
- (e) None of the above

31. What are the zeroes of $(x - 2)(x + 1)(2x - 5)$?

32. What is the y -intercept of $y = (x - 2)(x + 1)(2x - 5)$?

33. If $W^2 - 2W - 8 = 4(W - 2)$, find all possible values of W .

34. If $s = d^2 + d + 1$ and $d = g + 1$ express s in terms of g .

35. If $\theta = x^2 - 1$ express $(\theta + 1)^2$ in terms of x .

36. If $b = -2z$ express $b^2 - 2b$ in terms of z .

37. The graph of the equation $a^x = y$ passes through the point $(-3, \frac{1}{8})$. What is a ?

38. If $s = 2$ and $t = 0$ is a solution to $as^5 = s^7 + t$, what is a ?

39. Using Table P.1, what value of w gives $q = 7$?

Table P.1

| | | | | | |
|-----|----|----|---|----|----|
| w | -4 | -1 | 1 | 6 | 10 |
| q | 4 | 2 | 7 | -2 | 2 |

40. Using Table P.2, what is the temperature at 6 pm?

Table P.2

| | | | | |
|-----------------------------|----|----|----|----|
| Time (hours after midnight) | 0 | 6 | 12 | 18 |
| Temperature ($^{\circ}$ F) | 36 | 48 | 65 | 55 |

41. For some constant k , let $M = kN$. If $M = 0.84$ when $N = 12$, what is M when $N = 6$?

42. What is the area of the shaded rectangle in Figure P.6?

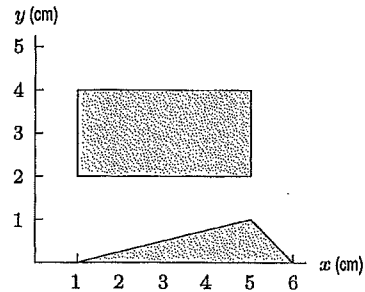


Figure P.6

43. What is the area of the shaded triangle in Figure P.6?

44. A price increases by a factor of 1.042. By what percent has the price increased?

45. A car, initially valued at \$21,000 is now worth 32% less. What is the car's current value?

46. An item priced at \$45 is on sale for 25% off. The customer pays the sale price plus 8% sales tax. How much does the customer pay?

Problems on Trigonometry (Optional)

1. What is the vertical intercept of $y = \cos x$?
2. What are the zeroes of $y = \sin x$ between $x = 0$ and $x = 2\pi$ (inclusive)?
3. How many degrees is 3π radians?
4. What are the coordinates of the highest point on the sine graph in Figure P.7?

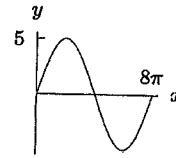


Figure P.7

① Point: $(0, 500)$
 $\frac{\text{rise}}{\text{run}} = \frac{2000}{10} = 200$

$y - 500 = 200(x - 0)$
 or
 $y = 200x + 500$

② equation:

Point: $(5, 47)$
 $\frac{\text{rise}}{\text{run}} = \frac{5}{10} = \frac{1}{2}$

$y - 47 = \frac{1}{2}(x - 5)$

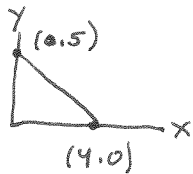
A + $(a, 54.5)$

$54.5 - 47 = \frac{1}{2}x - 2.5$

$10 = \frac{1}{2}x$

$20 = x = a$

③ x_2 axis is like y -axis



$a_1x + a_2y = 1$

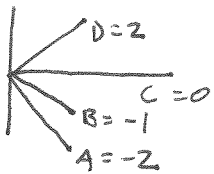
$a_1(0) + a_2(5) = 1$

$a_2 = \frac{1}{5}$

$a_1(4) + a_2(0) = 1$

$a_1 = \frac{1}{4}$

④



⑤ $P = P_0 \left(1 + \frac{r}{n}\right)^t$

$\frac{P}{\left(1 + \frac{r}{n}\right)^t} = P_0$

⑥ $A = \left(1 + \frac{r}{n}\right)^t$ take to power $\frac{1}{t}$

$P^{\frac{1}{t}} = 1 + \frac{r}{n}$

$P^{\frac{1}{t}} - 1 = \frac{r}{n}$

$n(P^{\frac{1}{t}} - 1) = r$

⑦ $f(0) = 4(0) + (0+3)^2$
 $0 + 3^2 = 9$

⑧ $0 = 4x + 28$
 $x = -7$

⑨ $16 - [x^2 - 6x + c] + c$

$16 - [x^2 - 3]^2 + c$ c must be $(-3)^2 = 9$

$16 - [x^2 - 3]^2 + 9$

$25 - [x^2 - 3]^2$

⑩ ~~$y = 0^3 + 8 = 8$~~ $y = 0^3 + 8 = 8$ $(0, 8)$

⑪ $0 = x^3 + 8$
 $-8 = x^3$ $x = \sqrt[3]{-8} = -2$ $(-2, 0)$

⑫ $10 + 10 = 20$

⑬ $\frac{T}{E} + E\left(\frac{E}{E}\right) = \frac{T}{E} + \frac{E^2}{E} = \frac{T+E^2}{E}$

⑭ $\frac{1}{y} \cdot \frac{y}{u} + \frac{1}{u} \cdot \frac{y}{y} = \frac{u+y}{uy}$

⑮ $\frac{y}{x} + \frac{x}{y} = \frac{y}{x} \cdot \frac{y}{y} + \frac{x}{y} \cdot \frac{x}{x}$
 $= \frac{y^2 + x^2}{xy}$

⑯ $\frac{\sqrt[3]{t}}{t} = \frac{t^{\frac{1}{3}}}{t^1} = t^{\frac{1}{3}-1} = t^{-2/3}$

⑰ $x^8 x^{20} = x^{28}$

⑱ $W^{\frac{2}{3} + \frac{3}{2}} = W^{\frac{4}{6} + \frac{9}{6}} = W^{\frac{13}{6}}$

$$(19) \quad -5u \left(\frac{3}{u}\right) + 5u(2v) \\ -15 + 10uv$$

$$(20) \quad 3p = 5 \\ p = \frac{5}{3}$$

$$(21) \quad 2x + a = 5 - 5x \\ a = 5 - 7x$$

$$a - 5 = -7x$$

$$\frac{a-5}{-7} = x$$

OR

$$\frac{5-a}{7} = x$$

$$(22) \quad 2\sqrt{w} = 12 \\ \sqrt{w} = 6 \\ w = 36$$

$$(23) \quad 2n = 15 \\ n = 7.5$$

$$(24) \quad q(C+D) = A \\ q = \frac{A}{C+D}$$

$$(25) \quad Y - 10 = 2(X - 3) \\ Y - 10 = 2X - 6 \\ Y - 4 = 2X \\ \frac{1}{2}(Y - 4) = X$$

$$(26) \quad -2x + 0 - 9 = 0 \\ -2x = 9 \\ x = -4.5$$

$$(27) \quad t = s + 1 \quad 3s - 8t = 7 \\ 3s - 8(s + 1) = 7 \\ 3s - 8s - 8 = 7 \\ -5s = 15 \\ s = -3$$

$$(28) \quad 6x(2x - a^2)$$

$$(29) \quad Cab(Ca^2 - b^2)$$

$$(30) \quad \begin{array}{r} -15 \\ 5 \times -3 \\ \hline 2 \end{array} (x+5)(x-3)$$

$$(31) \quad (x-2)(x+1)(2x-5) = 0$$

$$\begin{array}{ccc} x-2=0 & x+1=0 & 2x-5=0 \\ x=2 & x=-1 & 2x=5 \\ & & x=2.5 \end{array}$$

$$(32) \quad Y = (x-2)(x+1)(2x-5) \\ \text{When foiling, the } x\text{-int.} \\ \text{will be } (-2)(1)(-5) = 10$$

$$(33) \quad W^2 - 2W - 8 = 4W - 8 \\ W^2 - 6W = 0 \\ W(W-6) = 0 \\ W=0 \quad W-6=0 \\ \quad \quad \quad W=6 \quad \boxed{0 \text{ and } 6}$$

$$(34) \quad \text{Substitute to get rid of } d \\ S = (g+1)^2 + (g+1) + 1$$

$$(35) \quad \text{try to make } (\theta+1)^2 \\ \theta = x^2 - 1 \\ \theta + 1 = x^2 \\ (\theta+1)^2 = x^4$$

$$(36) \quad \text{try to make } b^2 - 2b \\ b = -2z \\ b^2 = (-2z)^2 \\ b^2 - 2b = 4z^2 - 2b$$

37

$$a^x = y \quad \left(-3, \frac{1}{8}\right)$$

$$a^{-3} = \frac{1}{8}$$

$$a = 2$$

$$y_1 = x^{-3}$$

$$y_2 = \frac{1}{8}$$

Find Intersection



38

$$a(2)^5 = 2^7 + 0$$

$$32a = 128$$

$$a = 4$$

39

$$q = 7 \text{ when } w = 1$$

40

6 pm occurs 18 hrs after midnight

temp at 18 = 55°F

41

$$.84 = K(12)$$

$$.07 = K$$

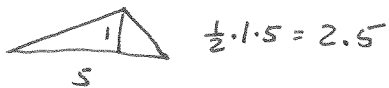
$$M = .07N$$

$$M = .07(6) = .42$$

42



43



44

$$4 - 2 = 2$$

45

$$21,000(.32) = 6720$$

$$21,000 - 6720 = 14280$$

46

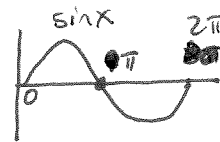
$$45(.75) = 33.75$$

$$33.75(1.08) = 36.45$$

1

hits y-axis at (0,1)

2



3

$$\frac{r}{d} = \frac{2\pi}{360}$$

$$\frac{3\pi}{d} = \frac{2\pi}{360}$$

$$d = 540 \text{ or } 180$$

4

