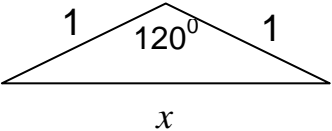
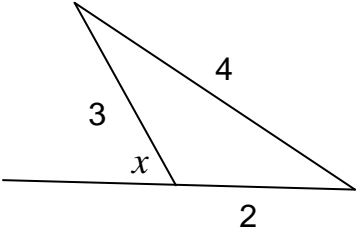
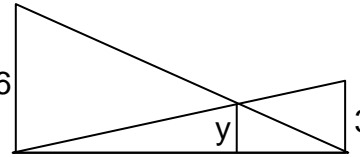
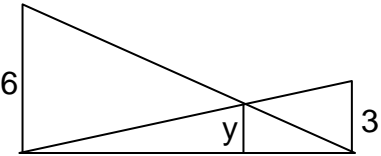
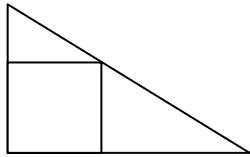


<p>A1</p> <p>The roots of $x^2 - 12x + c = 0$ differ by 6. Find c.</p>	<p>A2</p>  <p>$x = ?$</p>	<p>A3</p> <p>Solve:</p> $\log_3 x + \log_3(x+2) = 1$	<p>A4</p> <p>Let $f(x) = (1-x)^{-1}$, $g(x) = 1-x^{-1}$, and $h(x) = 1+x$. Evaluate $f(g(h(x)))$ for $x \neq -1$.</p>	<p>A5</p> <p>$x^2 - 10x + y^2 = k$ is a circle tangent to the y-axis for what real number k?</p>
<p>A6</p>  <p>$\cos(x) = ?$</p>	<p>A7</p> $\log_3(x) = \log_9(x) + 2$ <p>$x = ?$</p>	<p>A8</p> <p>$(0,0)$ and $(6,0)$ lie on perpendicular lines through $(3,k)$. If $k > 0$, find k.</p>	<p>A9</p> <p>If $f\left(\frac{x+1}{3x-2}\right) = 28x$ for all $x \neq 2/3$, find $f(5)$.</p>	<p>A10</p> <p>Simplify</p> $\ln(\sin^{-1}(1)) + \ln(2) - \ln(\pi)$
<p>A11</p>  <p>The segments of lengths 6, 3, and y are parallel. Find y.</p>	<p>A12</p> $f(x) = (x-5)^{1/3}$ <p>$f^{-1}(2) = ?$</p>	<p>A13</p> <p>Simplify</p> $x^2 + \cos^2(\sin^{-1}x)$	<p>A14</p> $\ln(y+2) = 3x$ $e^x = 2$ <p>$y = ?$</p>	<p>A15</p> $\cos(2x) = 1/3$ $\cos^2(x) = ?$
<p>A16</p> $f(x) = \frac{1}{x} + 1$ <p>Simplify $f(xf(-x))$ for x not equal to 0 or 1.</p>	<p>A17</p> <p>Find the slope of the tangent line to the circle $x^2 + y^2 = 25$ at $(4,3)$.</p>	<p>A18</p> <p>How many ways can four people sit at a round table if rotated seatings are the same?</p>	<p>A19</p> <p>Find the perimeter of a rectangle that has area 21 and a diagonal of length $\sqrt{58}$.</p>	<p>A20</p> <p>Simplify</p> $\sin^4(1^\circ) + 2\sin^2(1^\circ)\cos^2(1^\circ) + \cos^4(1^\circ)$

<p>A21 If $f(x) = \ln x$, $g(x) = 1/x^5$, and $h(x) = e^x$, evaluate $f(g(h(x)))$.</p>	<p>A22 $2x = 7 - y$ $y = 13 - 2z$ $x + y + z = ?$</p>	<p>A23 How many integers from 1 through 30 have 2 or 5 as a factor?</p>	<p>A24 Solve for x: $\frac{(\sqrt{x}-1)^3 + (\sqrt{x}+1)^3}{\sqrt{x}} = 14$</p>	<p>A25 Find the radius of the circle whose equation in polar coordinates is $r = 6\cos \theta + 8\sin \theta$.</p>
<p>A26 At a party with six people, each pair of people shakes hands just once. How many handshakes are there?</p>	<p>A27 $(1 + a\sqrt{2})^3 = 25 + b\sqrt{2}$ for positive integers a and b. Find b.</p>	<p>A28 If $y = \tan(u)$, $y = 3\sin(u)$, and $y \neq 0$, evaluate y^2.</p>	<p>A29 $f(x) = 2x + 3$ for all x. Solve for a: $f(a) = f^{-1}(a)$.</p>	<p>A30 $(h,8)$ and $(2,h^3)$ are two different points on a line of slope -12. Find h.</p>
<p>A31 $i^2 = -1$. $1 - \frac{2}{1+i} = bi$ for what real number b?</p>	<p>A32 Evaluate $\sin^4(75^\circ) - \cos^4(75^\circ)$</p>	<p>A33 What is the probability that flipping 5 coins gives exactly 2 heads?</p>	<p>A34 For all x, let $f(x) = 9876x^2 + x + 6$. Solve for a: $f(2a) = 4f(a)$.</p>	<p>A35 $10S = 1 + 2 + \dots + 200$ Find the value of S.</p>
<p>A36 Evaluate $\sin(\ln(\cos(\ln(1))))$</p>	<p>A37 For what integer x is $\frac{1}{x} < \frac{1}{x+2}$?</p>	<p>A38 How many angles x in radians satisfy $x^2 = \sin(x)$?</p>	<p>A39 How many games are played in a single elimination tournament of 32 teams?</p>	<p>A40 Find the largest prime factor of $2010^2 - 10^2$.</p>

<p>B1 a, b, and c are integers greater than 3 whose product is 80. What is their sum?</p>	<p>B2 Simplify $\left[(1 + \sqrt{5})^2 - (1 - \sqrt{5})^2 \right]^2$</p>	<p>B3 How many different real roots does $(x^2 - 16)^2 + (x^2 - 5x + 4)^2 = 0$ have?</p>	<p>B4 The triangle with vertices (0,0), (3,0), and (k,k+1) has area 6. If $k > 0$, what is k?</p>	<p>B5 How many integers from 1 through 30 have 2 or 5 as a factor?</p>
<p>B6 For what integer x is $\frac{1}{x} < \frac{1}{x+2} \quad ?$</p>	<p>B7 $\sqrt{76 + 10\sqrt{3}} = a + b\sqrt{3}$ for integers a and b. b = ?</p>	<p>B8 Find the slope of the tangent line to the circle $x^2 + y^2 = 25$ at (4,3).</p>	<p>B9 $24^r 18^s = 6^{20}$ for positive integers r and s. Find r.</p>	<p>B10 -1005 is a root of $x^2 + bx + 2010 = 0$. Find b.</p>
<p>B11 Find the perimeter of a rectangle that has area 21 and a diagonal of length $\sqrt{58}$.</p>	<p>B12 $x = y + 15$ $x^2 = y^2 + 225$ x = ?</p>	<p>B13 (0,0) and (6,0) lie on perpendicular lines through (3,k). If $k > 0$, find k.</p>	<p>B14 Solve for x: $\frac{(\sqrt{x} - 1)^3 + (\sqrt{x} + 1)^3}{\sqrt{x}} = 14$</p>	<p>B15 (h,8) and (2,h³) are two points on a line of slope -12. Find h.</p>
<p>B16 Solve for x: $8x^3 - 12x^2 + 6x = 1$</p>	<p>B17 The roots of $x^2 - 12x + c = 0$ differ by 6. Find c.</p>	<p>B18  The segments of lengths 6, 3, and y are parallel. Find y.</p>	<p>B19 Solve for x: $\sqrt{x+9} = 9 - \sqrt{x}$</p>	<p>B20 How many ways can four people sit at a round table if rotated seatings are the same?</p>

<p>B21</p> <p>Solve for x.</p> $ x - 1 = x - 9 $	<p>B22</p> $x^2 - 10x + y^2 = k$ <p>is a circle tangent to the y-axis for what real number k?</p>	<p>B23</p> <p>Simplify</p> $\left(\frac{39^2 - 1}{37^2 - 1} - 1 \right)^{-1}$	<p>B24</p> $\frac{1}{a} + \frac{1}{b} = \frac{1}{2}$ $ab = 24$ $a + b = ?$	<p>B25</p> <p>How many integers from 100 through 999 don't have three equal digits?</p>
<p>B26</p> <p>Solve for x:</p> $\left(\frac{5 + \sqrt{25 + x}}{2} \right)^{-1} = \frac{5 - \sqrt{25 + x}}{2}$	<p>B27</p> <p>How many ordered triples (x,y,z) of positive integers satisfy $x + y + z = 6$?</p>	<p>B28</p> <p>Find the side of a square inscribed in a right triangle with legs 3 and 4.</p> 	<p>B29</p> $2x = 7 - y$ $y = 13 - 2z$ $x + y + z = ?$	<p>B30</p> <p>What is the probability that flipping 5 coins gives exactly 2 heads?</p>
<p>B31</p> $i^2 = -1.$ $1 - \frac{2}{1+i} = bi$ <p>for what real number b?</p>	<p>B32</p> <p>Find the largest prime factor of $2010^2 - 10^2$.</p>	<p>B33</p> <p>At a party with six people, each pair of people shakes hands just once. How many handshakes are there?</p>	<p>B34</p> $y = x^2 + 6x + k$ <p>intersects</p> $y = -x^2 - 6x - k$ <p>at just one point. Find k.</p>	<p>B35</p> $(1 + a\sqrt{2})^3 = 25 + b\sqrt{2}$ <p>for positive integers a and b. Find b.</p>
<p>B36</p> <p>How many games are played in a single elimination tournament of 32 teams?</p>	<p>B37</p> <p>The points (h,2010) and (2h,h) lie on a nonvertical line with y-intercept 2007. Find h.</p>	<p>B38</p> $10S = 1 + 2 + \dots + 200$ <p>Find the value of S.</p>	<p>B39</p> <p>For what integer $h > 1$ is $h^2 + 2h$ a factor of 2010?</p>	<p>B40</p> <p>Evaluate</p> $(2010^2 - 4020 + 1)^{\frac{1}{2}}$