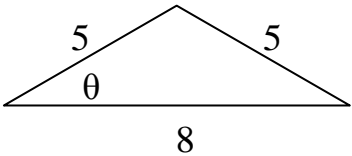
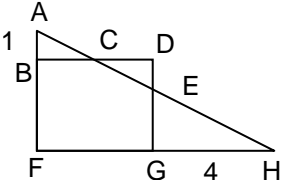
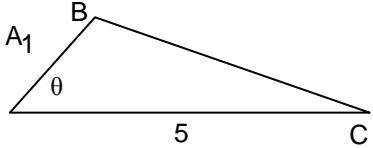
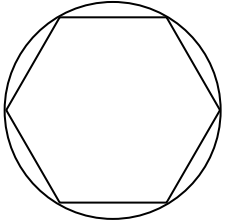
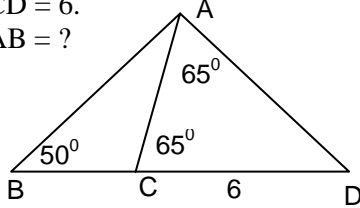
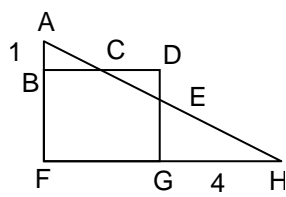
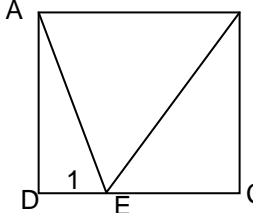


<p>A1</p> $100^{4x-1} = 1000^{x+2}$ <p>$x = ?$</p>	<p>A2</p> <p>Find $m < 0$ so that the line of slope m through $(2,1)$ has equal x and y intercepts.</p>	<p>A3</p> <p>Simplify</p> $\cos^2 \theta + \frac{\tan^2 \theta}{\sec^2 \theta}.$	<p>A4</p> <p>Find the area of a circle circumscribed about an isosceles right triangle with legs of length 2.</p>	<p>A5</p> <p>Simplify</p> $8^{\log_2(x)}$
<p>A6</p> <p>Let $f(x) = \sqrt{x^2 - 3}$.</p> <p>Simplify $f(f(x))$.</p>	<p>A7</p> <p>46 polygons are pentagons and octagons. They have 311 sides in all. How many are octagons?</p>	<p>A8</p> <p>What is the largest x-coordinate of any point (x,y) on the graph of $x^2 - 6x + y^2 + 2y = 6$?</p>	<p>A9</p> $a + b = 2$ $a^2 + b^2 = 3$ <p>Evaluate ab.</p>	<p>A10</p>  <p>$\sin(2\theta) = ?$</p>
<p>A11</p> <p>The points $(b+4,b)$, $(6,5)$, and $(b-2,b+3)$ lie on a line. Find b.</p>	<p>A12</p> <p>Solve for x:</p> $1 + \frac{1}{x} = \frac{x}{x+1}$	<p>A13</p> $1 + \log_{10}(x) = \log_{10}(x+3)$ <p>$x = ?$</p>	<p>A14</p> <p>Let k be a real number.</p> <p>Let $f(x) = \frac{3}{x} + k$</p> <p>for $x \neq 0$.</p> <p>If $f^{-1}(x) = f(x)$ for all $x \neq 0$, find k.</p>	<p>A15</p> $(x+21)^{\frac{3}{2}} = 125.$ <p>$x = ?$</p>
<p>A16</p> <p>Set $a_1 = 1$ and $a_{n+1} = 2a_n + 1$ for each integer n. Evaluate a_7.</p>	<p>A17</p> <p>What is the largest real number c such that $x^2 + 6x + c$ has at least one real root?</p>	<p>A18</p> <p>The hour hand of a clock is 3 inches long. How many inches does the tip of the hand move per day?</p>	<p>A19</p> <p>What is the coefficient of x^2y^3 in the expansion of $(2x - y)^5$?</p>	<p>A20</p> <p>Evaluate $\cos(120^\circ) + \cos(240^\circ) + \cos(360^\circ)$.</p>

<p>A21</p> <p>Solve for x:</p> $7x^{-1} + (7x)^{-1} = 14^{-1}.$	<p>A22</p> <p>Find the area of the rectangle with horizontal and vertical sides that is circumscribed about the graph of $x^2 + 4y^2 = 12$.</p>	<p>A23</p> <p>How many ways are there to arrange the letters in NANNY?</p>	<p>A24</p> <p>For what number b does the vertex of the parabola $y = x^2 + bx - 3$ have x-coordinate 2?</p>	<p>A25</p> <p>Solve for x: $\log_2(\log_2(\log_2(5x - 4))) = 1.$</p>
<p>A26</p> <p>BDGF is a square of area 25. $AB = 1$ and $GH = 4$. $DC/DE = ?$</p> 	<p>A27</p> <p>Let $f(x) = x^2$ for all x. Solve for t: $f(t + 3) = f(t) + 3$</p>	<p>A28</p> <p>What is the x-coordinate of the point on the line $y = x$ that is closest to the point $(3, 1)$?</p>	<p>A29</p> <p>$\triangle ABC$ has area 2. $AB = 1$. $AC = 5$. $\theta < 90^\circ$. $\tan \theta = ?$</p> 	<p>A30</p> <p>Solve for x: $x^{1/2} + y = 3$ $x + 2y = 9$</p>
<p>A31</p> <p>Evaluate and simplify $\frac{8(8!)}{9! - 8!}$</p> <p>where $n! = n(n-1) \cdots 2 \cdot 1$ for any positive integer n.</p>	<p>A32</p> <p>Find the distance between the x-intercepts of the circle with center $(0, 2)$ and radius $\sqrt{13}$.</p>	<p>A33</p> $\sqrt{b + 2\sqrt{3}} = c + d\sqrt{3}$ <p>for integers b, c, and d. $b = ?$</p>	<p>A34</p> <p>What is the probability that 4 flips of a fair coin give an odd number of heads?</p>	<p>A35</p> <p>$(a + bi)(1 + i) = 2006$ for integers a and b and $i^2 = -1$. $a = ?$</p>
<p>A36</p> $x^4 y^3 = 2$ $x^3 y^2 = 2$ <p>$x = ?$</p>	<p>A37</p> <p>A right triangle has perimeter 24 in. and area 24 sq. in. How many inches long is the hypotenuse?</p>	<p>A38</p> $1 + 2 + 4 + 8 + \dots + 2^n = 2^{2006} - 1.$ <p>$n = ?$</p>	<p>A39</p> <p>Evaluate $2006^{\sin(2006\pi)} - \cos(2006\pi)$.</p>	<p>A40</p> $\sqrt{9 - x} = 3 - \sqrt{x}$ <p>$x > 0$ $x = ?$</p>

<p>B1</p> <p>Simplify</p> $\left(3^{-1} - 2^{-1}\right)^{-2}$	<p>B2</p> <p>One root of $x^2 - 2006x + c$ is $x = 2001$. What is the other root?</p>	<p>B3</p> <p>A triangle has angles of measure x, y, and z in degrees. If $x = 5z$ and $x - y = 40^\circ$, find y.</p>	<p>B4</p> $(x + 21)^{\frac{3}{2}} = 125.$ <p>$x = ?$</p>	<p>B5</p> <p>For what number k are the lines $-4x + ky = 6$ and $6x - 9y = 33$ parallel?</p>
<p>B6</p> <p>Evaluate</p> $\frac{72^{20}}{54^{13}16^{11}}$	<p>B7</p> <p>Solve for x:</p> $7x^{-1} + (7x)^{-1} = 14^{-1}.$	<p>B8</p> <p>How many ways are there to arrange the letters in NANNY?</p>	<p>B9</p> <p>A regular hexagon is inscribed in a circle of radius 6. How long is each side of the hexagon?</p> 	<p>B10</p> $x^4 y^3 = 2$ $x^3 y^2 = 2$ <p>$x = ?$</p>
<p>B11</p> <p>Solve for x:</p> $x^{10} - 2^6 x^5 + 2^{10} = 0$	<p>B12</p> $a + b = 2$ $a^2 + b^2 = 3$ <p>Evaluate ab.</p>	<p>B13</p> <p>$\angle ABC = 50^\circ$ $\angle DAC = 65^\circ = \angle ACD$. $CD = 6$. $AB = ?$</p> 	<p>B14</p> <p>Solve for x:</p> $4^x + 9^x = 5$	<p>B15</p> $100^{4x-1} = 1000^{x+2}$ <p>$x = ?$</p>
<p>B16</p> <p>Find $m < 0$ so that the line of slope m through $(2,1)$ has equal x and y intercepts.</p>	<p>B17</p> <p>Solve for x:</p> $1 + \frac{1}{x} = \frac{x}{x+1}$	<p>B18</p> <p>Evaluate the infinite sum $.81 + .081 + .0081 + \dots$ as a fraction in lowest terms.</p>	<p>B19</p> <p>A right triangle has perimeter 24 in. and area 24 sq. in. How many inches long is the hypotenuse?</p>	<p>B20</p> $ 2x - 7 = x - 8 $ <p>$x > 0$</p> <p>$x = ?$</p>

<p>B21</p> $1000x^3 = (.0001)^{-21}$ $x = 10^k$ $k = ?$	<p>B22</p> <p>Solve for x:</p> $x^{1/2} + y = 3$ $x + 2y = 9$	<p>B23</p> <p>For what digit M is the 3-digit integer $M27$ divisible by 11?</p>	<p>B24</p> <p>What is the largest real number c such that $x^2 + 6x + c$ has at least one real root?</p>	<p>B 25</p> <p>Find the area of a circle circumscribed about an isosceles right triangle with legs of length 2.</p>
<p>B26</p> <p>Solve for x:</p> $ x^2 - 4 + x^2 + 5x + 6 = 0.$	<p>B27</p> <p>46 polygons are pentagons and octagons. They have 311 sides in all. How many are octagons?</p>	<p>B28</p> $x + x^{-1} = 2\frac{1}{2}.$ $x \neq 2.$ $x = ?$	<p>B29</p> $x^2 + 7x + c$ <p>has integer roots.</p> $c > 10.$ $c = ?$	<p>B30</p> $(3 + \sqrt{5})^{1/2} = k(3 - \sqrt{5})^{-1/2}$ <p>Find k and simplify it.</p>
<p>B31</p> <p>The points $(b+4, b)$, $(6, 5)$, and $(b-2, b+3)$ lie on a line. Find b.</p>	<p>B32</p> $ax^2 + bx + 24$ <p>has -2 and 3 as roots. What is a?</p>	<p>B33</p> <p>The hour hand of a clock is 3 inches long. How many inches does the tip of the hand move per day?</p>	<p>B34</p> <p>Set $a_1 = 1$ and $a_{n+1} = 2a_n + 1$ for each integer n. Evaluate a_7.</p>	<p>B35</p> $\sqrt{b + 2\sqrt{3}} = c + d\sqrt{3}$ <p>for integers b, c, and d. $b = ?$</p>
<p>B36</p> $1 + 2 + 4 + 8 + \dots + 2^n = 2^{2006} - 1.$ $n = ?$	<p>A26</p> <p>BDGF is a square of area 25. $AB = 1$ and $GH = 4$. $DC/DE = ?$</p> 	<p>B38</p> <p>Simplify $(x - y)^{-2} - (y - x)^{-2}$.</p>	<p>B39</p> <p>ABCD is a square of area 8. $DE = 1$. Find the sum of the areas of $\triangle ADE$ and $\triangle BCE$.</p> 	<p>B40</p> $\sqrt{9 - x} = 3 - \sqrt{x}$ $x > 0$ $x = ?$