50. $\sec\theta = -\frac{13}{5}$ and $\tan\theta > 0$. Then $\cos\theta = -\frac{5}{13}$, and θ must be in quadrant III $\Rightarrow$ $\sin\theta < 0$. Therefore, $\sin\theta = -\sqrt{1-\cos^2\theta} = -\sqrt{1-\frac{25}{169}} = -\frac{12}{13}$, $\csc\theta = -\frac{13}{12}$, $\tan\theta = \dfrac{\sin\theta}{\cos\theta} = \frac{12}{5}$, and $\cot\theta = \frac{5}{12}$.

52. $\sin\theta = \frac{1}{2}$ for θ in quadrant I. Then $\tan\theta + \sec\theta = \dfrac{\sin\theta}{\cos\theta} + \dfrac{1}{\cos\theta} = \dfrac{\sin\theta+1}{\cos\theta} = \dfrac{\sin\theta+1}{\sqrt{1-\sin^2\theta}}$ $= \frac{\frac{1}{2}+1}{\sqrt{1-\frac{1}{2}}} = \frac{2\sqrt{3}}{2} = \sqrt{3}$

54. $\cos\theta = -\frac{\sqrt{3}}{2}$ and $\frac{\pi}{2} < \theta < \pi$. Then $\theta = \frac{5\pi}{6}$ $\Rightarrow$ $2\theta = \frac{10\pi}{6} = \frac{5\pi}{3}$. So $\sin 2\theta = \sin\frac{5\pi}{3} = -\sin\frac{\pi}{3}$ $= -\frac{\sqrt{3}}{2}$

56. $x = \dfrac{2\cdot\sin 45^\circ}{\sin 105^\circ} \approx 1.46$

58. $x^2 = 2^2 + 8^2 - 2(2)(8)\cdot\cos 120^\circ = 84$ $\Leftrightarrow$ $x \approx \sqrt{84} \approx 9.17$

60. $\sin B = \dfrac{4\cdot\sin 110^\circ}{6} \approx 0.626$ $\Leftrightarrow$ $\angle B \approx 38.79^\circ$. Then $\angle C \approx 180^\circ - 110^\circ - 38.79^\circ = 31.21^\circ$, and so $x \approx \dfrac{6\cdot\sin 31.21^\circ}{\sin 110^\circ} \approx 3.3$.