Practice Problems for Exam 2

Graph each of the following for one period:

1. $y = 2\sin x$
2. $y = \sin 3x$
3. $y = \cos 2x - 1$
4. $y = -2\cos(x + \frac{\pi}{4})$
5. $y = \sin(x + \frac{\pi}{2}) - 1$
6. $y = -\sin(2x - \pi) + 3$
7. $y = \tan(2x)$
8. $y = \cot(\frac{1}{2}x)$
9. $y = \tan(2x - \frac{\pi}{4})$
10. $y = \frac{1}{2}\cot(x - \frac{\pi}{2})$
11. $y = \sec 2x$
12. $y = \csc x + 2$

Find the inverse (unique) for each of the following:

13. $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$
14. $\cot^{-1}\left(-\frac{\sqrt{3}}{3}\right)$
15. $\csc^{-1}\left(-\sqrt{2}\right)$
16. $\sin^{-1}\left(\cot\frac{\pi}{4}\right)$
17. $\cos^{-1}\left(\tan\frac{\pi}{3}\right)$

Evaluate each of the following, where the solution is $0 \le \theta \le 2\pi$:

18. $\sin^{-1}\left(\frac{1}{2}\right)$

19. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

20. $\tan^{-1} 1$

Answers:

1 – 12: Check with https://www.desmos.com/calculator

13. $-\frac{\pi}{3}$

14. $-\frac{\pi}{3}$

15. $-\frac{\pi}{4}$

16. $\frac{\pi}{2}$

17. Undefined.

18. $\frac{\pi}{6}, \frac{5\pi}{6}$

19. $\frac{3\pi}{4}, \frac{5\pi}{4}$

20. $\frac{\pi}{4}, \frac{5\pi}{4}$