

# Math 1613 - Trigonometry

Quiz #11 - 2018.09.24

Solutions

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Find the exact values of  $s$  on the interval  $[0, 2\pi)$  satisfying the condition  $\sin^3(s) = -\frac{1}{8}$ .

So we need to solve  $\sin^3(s) = -\frac{1}{8}$ , which we can rewrite as  $\sin(s) = -\frac{1}{2}$  after taking a cube root of both sides. Note that  $\sin(s)$  is negative in quadrants III and IV, so we solve  $\sin(s) = \frac{1}{2}$  in quadrant I and adjust. In quadrant I,  $\sin(\pi/6) = \frac{1}{2}$ , so our reference angle is  $s = \frac{\pi}{6}$ . Thus, in quadrant IV, this would be  $2\pi - \pi/6 = \frac{11}{6}\pi$ . In quadrant III, we have  $\pi + \pi/6 = \frac{7}{6}\pi$ .