

ANSWERS TO QUIZ 5

1. (a) (i) $H_0 : \mu = 0$
 (ii) H_0 : The exercise program has no effect on average pain rating.
 - (b) (i) $H_a : \mu \neq 0$
 (ii) H_a : The exercise program has an effect on average pain rating.
 - (c) $|t| > t_{.025} = 2.064$
 - (d) $t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}} = \frac{-10.76 - 0}{7.82/\sqrt{25}} = -6.880$
 - (e) Yes
 - (f) $p\text{-value} = 2P(t_{24} < -6.880) < 2(0.0005) = 0.001$
 - (g) (i) Conclude $\mu \neq 0$. Explore: conclude $\mu < 0$.
 (ii) There is enough evidence to conclude that the exercise program has an effect on average pain rating. The effect is negative, that is, increase in pain.
2. (0.222109, 0.534648)
3. (a) (i) $H_0 : p = 0.5$
 (ii) H_0 : Half the prisoners who commit suicide in jail are in for murder or manslaughter.
 - (b) (i) $H_a : p \neq 0.5$
 (ii) H_a : Proportion of prisoners who commit suicide in jail are in for murder or manslaughter differs from half.
 - (c) $|z| > z_{.025} = 1.96$
 - (d) $z = -1.48$
 - (e) No
 - (f) $p\text{-value} = 0.139$
 - (g) (i) Inconclusive, insufficient evidence to conclude $p \neq 0.5$.
 (ii) There is not enough evidence to conclude that the proportion of prisoners who commit suicide in jail are in for murder or manslaughter differs from half.