James Ding

APCalc AB: HW 1.4

2. a. $\frac{2948 - 2530}{42 - 36}$

$= 69.667$ bpm

b. $\frac{2948 - 2661}{42 - 38}$

$= 71.75$ bpm

c. $\frac{2948 - 2806}{42 - 40}$

$= 71$ bpm

d. $\frac{3080 - 2948}{44 - 42}$

$= 66$ bpm

Patient's heartrate decreases after 42 minutes pretty steeply. Something could be going on.

Estimate after $t = 42$, around 66 bpm?

4. a. v. $\frac{f(1) - f(0.5)}{1 - 0.5} = -2$

vi. $\frac{f(0.6) - f(0.5)}{0.6 - 0.5} = -3.090169$

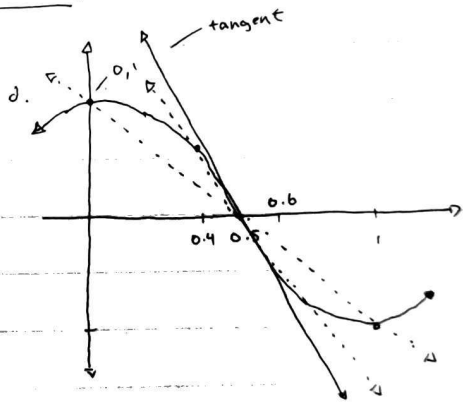
vii. $\frac{f(0.51) - f(0.5)}{0.51 - 0.5} = -3.141075$

viii. $\frac{f(0.501) - f(0.5)}{0.501 - 0.5} = -3.141587$

b. $-\pi$

c. $y = -\pi(x - 0.5)$

d.



4. a. Let $f(x) = \cos \pi x$

i. $\frac{f(0.5) - f(0)}{0.5 - 0} = -2$

ii. $\frac{f(0.5) - f(0.4)}{0.5 - 0.4} = -3.090169$

iii. $\frac{f(0.5) - f(0.49)}{0.5 - 0.49} = -3.141075$

iv. $\frac{f(0.5) - f(0.499)}{0.5 - 0.49} = -3.141587$

6. a. Let $f(x) = 10t - 1.86t^2$

i. $\frac{f(2) - f(1)}{2 - 1} = 4.42$ m/s

ii. $\frac{f(1.5) - f(1)}{1.5 - 1} = 5.35$ m/s

iii. $\frac{f(1.1) - f(1)}{1.1 - 1} = 6.094$ m/s

iv. $\frac{f(1.01) - f(1)}{1.01 - 1} = 6.2614$ m/s

v. $\frac{f(1.001) - f(1)}{1.001 - 1} = 6.27814$ m/s

b. Around 6.28

8. a. Let $f(x) = 2\sin \pi x + 3\cos \pi x$

i. $\frac{f(2) - f(1)}{2 - 1} = \boxed{6 \text{ cm/s}}$

ii. $\frac{f(1.1) - f(1)}{1.1 - 1} = \boxed{-4.712 \text{ cm/s}}$

iii. $\frac{f(1.01) - f(1)}{1.01 - 1} = \boxed{-6.314 \text{ cm/s}}$

iv. $\frac{f(1.001) - f(1)}{1.001 - 1} = \boxed{-6.268 \text{ cm/s}}$

b. Around -6.27