Answers to Math 21a Practice Hourly 1 Detailed answers will be posted
on Tuesday.

(1) FFFTFTTTFTTFFTTFFFFTF

(2) III, II, I, IV

(3) VI, I, V, III, IV, II

(4) a) $2\sqrt{6}$ b) $\sqrt{2}$

(5) 1) $(-\sin(\pi t) + (10 + \pi)t, -\cos(\pi t) + \frac{t^3}{3} + 1, 27 - t^3)$
   2) $t = 3$, $(x, y) = (30 + 3\pi, 11)$

(6) 1) $\mathbf{r}(t) = (1 - 4t, -1 + 5t, 4 - 2t)$ 2) $R = (-3, 4, 2)$ c) 9

(7) a) A half plane contained in $\{x = y\}$
   b) The half cone $(x^2 + y^2 = z^2)$, $z \geq 0$)
   c) A circular paraboloid

(8) a)

$$\mathbf{v}(t) = \langle 2t, 3\pi \cos(3\pi t), -5\pi \sin(5\pi t) \rangle$$

$$\mathbf{a}(t) = \langle 2, -9\pi^2 \sin(3\pi t), -25\pi^2 \cos(5\pi t) \rangle$$

   b) $\sqrt{4 + 9\pi^2}$
   c)

$$\int_1^{10} \sqrt{4t^2 + 9\pi^2 \cos^2(3\pi t) + 25\pi^2 \sin^2(5\pi t)} \ dt$$

(9) a) The surface is an elliptical cone.
   b) $\mathbf{r}(t) = (at, bt, ct)$.

(10) $x + z = 1$