Answer Key

1	(i)	$4(x+3)^2+13$
	(ii)	Max $\frac{1}{y}=\frac{1}{13}$ and $x=-3$
2		0.347
4	(i)	$\frac{7}{20}$
	(ii)	$\frac{19}{20}$
	(iii)	$\frac{24}{7}$
5	(i)	$\frac{e^{2x+1}(2x+5)}{(x+3)^3}$
	(ii)	Increasing function
6		$k>\frac{3}{5}$ or $k<-1$
7		$y=x^3-5x^2-8x+10$
8	(a)	$\frac{2}{3}$
	(b)	3
9	(i)	$a=-4$ $b=3$
	(ii)	$(x+3)(x-1)(x-2)$
10	(i)	$8x\cos 2x+4\sin 2x$
	(ii)	$-\frac{8\pi}{5}$ radians/sec
	(iii)	$-\frac{1}{4}-\frac{\pi}{8}$
	(iv)	area enclosed by the curve $y=x\cos 2x$ below the x-axis between $x=\frac{\pi}{4}$ and $x=\frac{\pi}{2}$.
11	(ii)	x from 4.8 to 5.2 y from 0.5 to 0.7
	(iii)	$y=\frac{5}{x^2}+\frac{2}{x}$
12	(i)	$28\frac{1}{8}$ m/s
	(ii)	5.5
	(iii)	$115\frac{23}{24}$ m
	(iv)	$236\frac{5}{12}$ m
13	(ii)	$\sqrt{706}\cos(\theta-70.2°)$
	(iii)	58.3°, 82.1°

	(iv)	$\theta=70.2°$
14	(i)	$\frac{3h-6}{7}=x_T$ $x_U=12-5h$
	(iii)	maximum $A=7.61$