p.420-422 #6, 7, 9, 11, 15, 20-23, 24*, 26, 27, 30, 31, 36, 37, 40

6.) $f(x)=\sqrt{x}$ $g(x)=x^2+2$

a.) $f(x)+g(x)=\sqrt{x}+x^2+2$

$=\boxed{x^2+\sqrt{x}+2}$

b.) $f(x)-g(x)=\sqrt{x}-(x^2+2)$

$=\sqrt{x}-x^2-2$

$=\boxed{-x^2+\sqrt{x}-2}$

c.) $f(x)g(x)=\sqrt{x}(x^2+2)$

$=x^{\frac{1}{2}}x^2+2\sqrt{x}$

$=\boxed{x^{\frac{5}{2}}+2\sqrt{x}}$

d.) $\frac{f(x)}{g(x)}=\boxed{\frac{\sqrt{x}}{x^2+2}}$

$u(x)=2x-1$ $v(x)=1-x$ $w(x)=\frac{1}{x}$

7.) $f(x)=u(x)+v(x)$

$=2x-1+1-x$

$\boxed{f(x)=x}$

9.) $h(x)=2u(x)-3v(x)$

$=2(2x-1)-3(1-x)$

$=4x-2-3+3x$

$\boxed{h(x)=7x-5}$

11.) $k(x)=(v(x))^2$

$=(1-x)^2$

$=(1-x)(1-x)$

$=1-x-x+x^2$

$\boxed{k(x)=x^2-2x+1}$

$u(x)=e^x$ $v(x)=2x+1$

15.) $h(x)=(v(u(x)))^2=(2(e^x)+1)^2$

$=(2e^x+1)(2e^x+1)$

$=4(e^x)^2+2e^x+2e^x+1$

$\boxed{h(x)=4e^{2x}+4e^x+1}$

$f(x)=\sin x$ $g(x)=x^2$

20.) $\boxed{f(g(x))=\sin(x^2)}$

21.) $g(f(x))=(\sin x)^2$

$\boxed{g(f(x))=\sin^2 x}$

22.) $1-(f(x))^2=1-\sin^2 x$

$=\boxed{\cos^2 x}$

23.)

x	-1	0	1	2	3	4
$f(x)$	-4	-1	2	5	8	11
$g(x)$	4	1	0	1	4	9

a.) $h(x)=f(x)+g(x)=$

0	0	2	6	12	20

b.) $j(x)=2f(x)=$

-8	-2	4	10	16	22

c.) $k(x)=(g(x))^2=$

16	1	0	1	16	81

d.) $m(x)=\frac{g(x)}{f(x)}=$

-1	-1	0	$\frac{1}{5}$	$\frac{1}{2}$	$\frac{9}{11}$

24.) $f(x) = x+1 \quad g(x) = x^2-1$

c.) $h(x) = f(x)\cdot g(x)$

$= (x+1)(x^2-1)$

$x^3 - x + x^2 - 1$

$\boxed{h(x) = x^3 + x^2 - x - 1}$

d.) $m(x) = \dfrac{g(x)}{f(x)}$

$\dfrac{(x^2-1)}{x+1}$

$\dfrac{(x+1)(x-1)}{(x+1)}$

$\boxed{m(x) = x-1}$

e.) $n(x) = (f(x))^2 - g(x)$

$= (x+1)^2 - (x^2-1)$

$= x^2 + 2x + 1 - x^2 + 1$

$\boxed{n(x) = 2x+2}$

26.) $f(g(65)) = f(50) = \boxed{63 \approx 65}$

27.) $v(50) \quad v(x) = g(x)f(x) \quad v(50) = g(50)f(50) = 72 \cdot 63 \approx 70 \cdot 65$

$\boxed{= 4536 \approx 4550}$

30.) $F(x) = \cos x \quad f(x) = -\sin x \quad G(x) = \sqrt{x} \quad g(x) = \dfrac{1}{2\sqrt{x}}$

$H(x) = F(G(x))$

$\boxed{H(x) = \cos(\sqrt{x})}$

$h(x) = f(G(x))\cdot g(x)$

$= -\sin(\sqrt{x}) \cdot \dfrac{1}{2\sqrt{x}}$

$\boxed{h(x) = \dfrac{-\sin(\sqrt{x})}{2\sqrt{x}}}$ ← $\sqrt{x}$ does not cancel!

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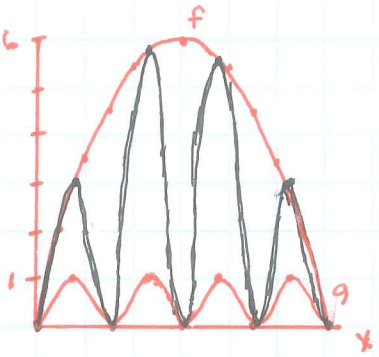
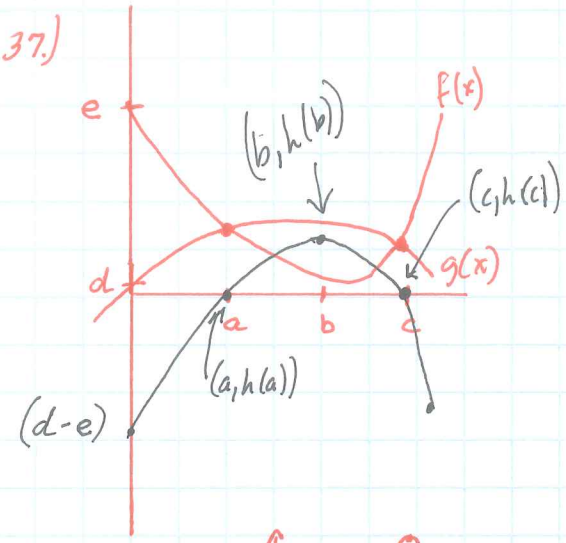
(10.3)

31.)



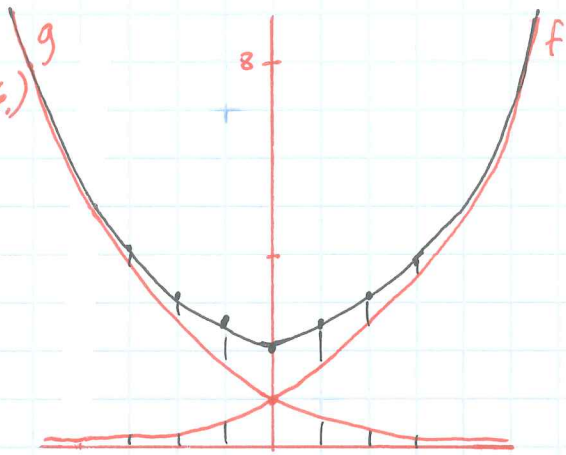
$h(x) = f(x)g(x)$

37.)



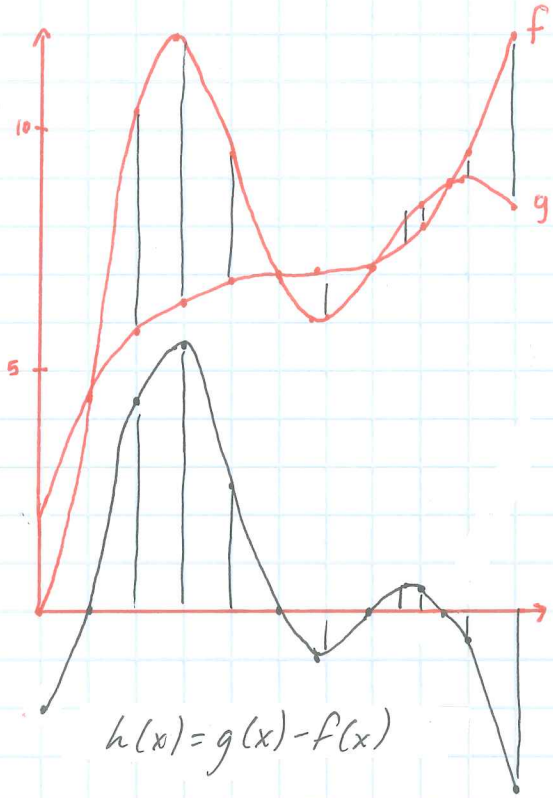
$h(x) = g(x) + f(x)$

36.)



$h(x) = f(x) + g(x)$

40.)



$h(x) = g(x) - f(x)$