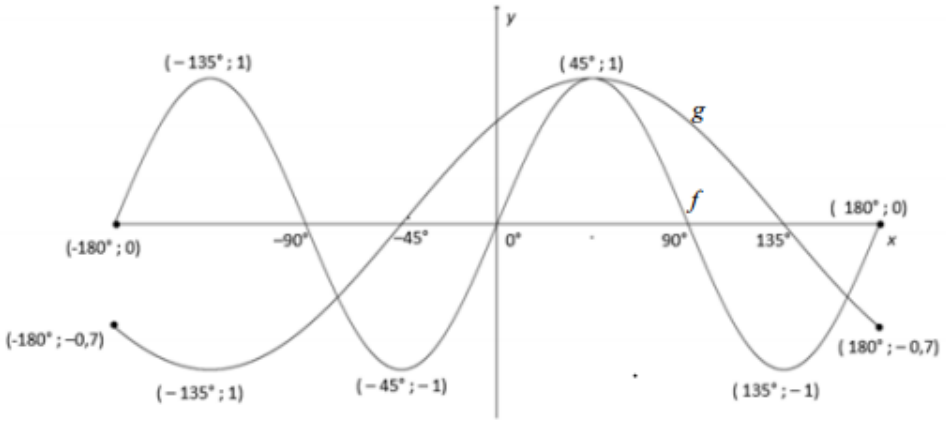
QUESTION/*VRAAG* 5

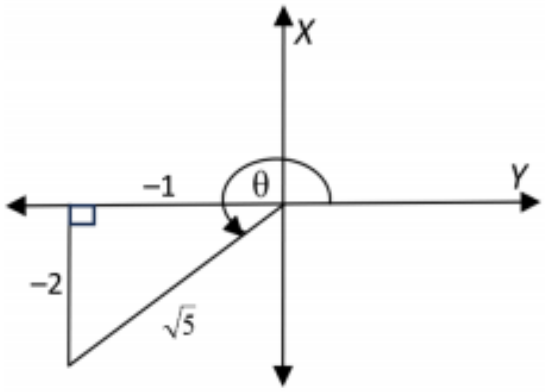
5.1

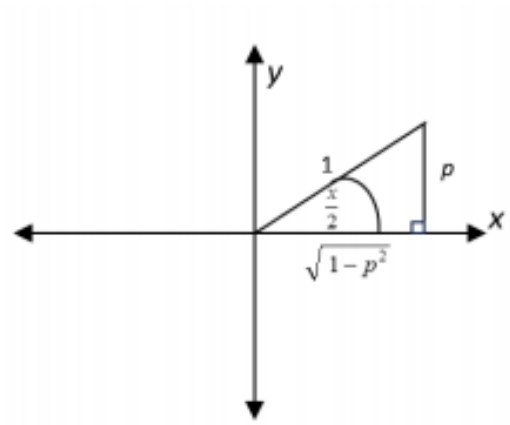


✓ turning points/*draaipunte*
✓ *x*-intercepts/*x-afsnitte*
✓ end points/*eindpunte* (3)

5.2.1	$\sin 2x = \cos(x - 45°)$ $\sin 2x = \sin[90° - (x - 45°)]$ $\sin 2x = \sin(135° - x)$ $2x = 135° - x + k.360°; k \in Z$ $3x = 135° + k.360°; k \in Z$ $x = 45° + k.120°; k \in Z$ **OR/*OF*** $2x = 180° - (135° - x) + k,360; k \in Z$ $2x = 45° + x + k.360; k \in Z$ $x = 45° + k.360; k \in Z$ $x \in \{45°; 165°\}$ **OR/*OF*** $\sin 2x = \cos(x - 45°)$ $\cos(90° - 2x) = \cos(x - 45°)$ $90° - 2x = x - 45° + k.360°; k \in Z$ $-3x = -135° + k.360°; k \in Z$ $x = 45° + k.120°;\ k \in Z$ **OR/*OF*** $90° - 2x = 360° - (x - 45°) + k.360°; k \in Z$ $90° - 2x = 360° - x + 45° + k.360°; k \in Z$ $-x = 315° + k.360; k \in Z$ $x = -315° + k.360; k \in Z$ $x \in \{45°; 165°\}$	✓ $\sin 2x = \sin[90° - (x - 45°)]$ ✓ $2x = 135° - x + k.360°; k \in Z$ ✓ $x = 45° + k.120°; k \in Z$ ✓$2x = 180° - (135° - x) + k,360;$ $k \in Z$ $x = 45° + k.360;$ ✓ $k \in Z$ ✓ $x = 45°$ ✓ $x = 165$ (7) ✓$\cos(90° - 2x) = \cos(x - 45°)$ ✓ $-3x = -135° + k.360°; k \in Z$ ✓ $x = 45° + k.120°; k \in Z$ ✓$90° - 2x = 360° - (x - 45°) +$ $k.360°; k \in Z$ $x = -315° + k.360;$ ✓ $k \in Z$ ✓ $x = 45°$ ✓ $x = 165$ (7)
5.2.2	$x \in \{15°; 135°\}$	✓ $x = 15°$ ✓ $x = 135°$ (2)
5.2.3	$x \in (165°; 180°)$ **OR/*OF*** $165° < x < 180°$	(2) ✓✓ critical values & notation/*kritiese waardes en notasie* (2)
5.3	$360°$	✓answer/*antwoord* (1)
5.4	$\sqrt{2}\sin 2x = \cos x + \sin x$ $\sin 2x = \frac{\cos x + \sin x}{\sqrt{2}}$ $\sin 2x = \frac{1}{\sqrt{2}}\cos x + \frac{1}{\sqrt{2}}\sin x$ $\sin 2x = \cos x \cos 45° + \sin x \sin 45°$ $\sin 2x = \cos\ (x - 45°)$ $f(x) = g(x)$	✓ $\sin 2x = \frac{\cos x + \sin x}{\sqrt{2}}$ ✓$\sin 2x = \frac{1}{\sqrt{2}}cos\ x + \frac{1}{\sqrt{2}}sin\ x$ ✓$\sin 2x = \cos x \cos 45° + \sin x \sin 45°$ (3)
		[18]

QUESTION/*VRAAG* 6

6.1.1	 $\tan\theta = \frac{-2}{-1}$ $= 2$	✓ $x = -1$ ✓ answer/*antwoord* (2)
6.1.2	$\cos 2\theta$ $= 2\cos^2\theta - 1$ $= 2\left(\frac{-1}{\sqrt{5}}\right)^2 - 1$ $= \frac{-3}{5}$ **OR/*OF*** $1 - 2\sin^2\theta$ $= 1 - 2\left(\frac{-2}{\sqrt{5}}\right)^2$ $= \frac{-3}{5}$ **OR/*OF*** $\cos^2\theta - \sin^2\theta$ $= \left(\frac{-1}{\sqrt{5}}\right)^2 - \left(\frac{-2}{\sqrt{5}}\right)^2$ $= \frac{-3}{5}$	✓ double angle identity/*dubbel hoek identitiet* ✓ substitution into correct formula/*substitusie in korrekte formule* ✓ answer/*antwoord* (3) ✓ double angle identity/*dubbel hoek identitiet* ✓ substitution into correct formula/*substitusie in korrekte formule* ✓ answer/*antwoord* (3) ✓ double angle identity *dubbel hoek identitiet* ✓ substitution into correct formula/*substitusie in korrekte formule* ✓ answer/*antwoord* (3)

6.2	$2\cos^2 15° - 1 + \frac{2\sin 140°}{\cos 310°}$ $= \cos 30° + \frac{(2\sin 40°)}{(\cos 50°)}$ $= \frac{\sqrt{3}}{2} + \frac{2\sin 40°}{\sin 40°}$ $= \frac{\sqrt{3}+4}{2}$	✓ $\cos 30°$ ✓ $\sin 40°$ ✓ $\cos 50°$ ✓ $\sin 40°$ ✓ answer/*antwoord* (5)
6.3	 $\sin x - 1$ $= 2\sin\frac{x}{2}\cos\frac{x}{2} - 1$ $= 2\left(\frac{p}{1}\right)\left(\frac{\sqrt{1-p^2}}{1}\right) - 1$ $= 2p\sqrt{1-p^2} - 1$	✓ $x = \sqrt{1-p^2}$ ✓ double angle/*dubbelhoek* ✓ substitution/*substitusie* ✓ answer/*antwoord* (4)
6.4	$\frac{3\sin x + 2(2\sin x\cos x)}{2 + 3\cos x + 2(2\cos^2 x - 1)}$ $= \frac{\sin x\,.\,(3 + 4\cos x)}{4\cos^2 x + 3\cos x}$ $= \frac{\sin x\,.\,(3 + 4\cos x)}{\cos x\,.\,(4\cos x + 3)}$ $= \tan x$	✓2 $\sin x\cos x$ ✓2 $\cos^2 x - 1$ ✓$\sin x\,(3 + 4\cos x)$ ✓$\cos x\,(4\cos x + 3)$ (4)

Marking Guidelines/*Nasienriglyne*

6.5	$\frac{\sin x + \cos x}{\sin x - \cos x}$ $= \frac{\frac{\sin x}{\cos x} + \frac{\cos x}{\cos x}}{\frac{\sin x}{\cos x} - \frac{\cos x}{\cos x}}$ $= \frac{\tan x + 1}{\tan x - 1}$ $= \frac{\frac{p}{t} + 1}{\frac{p}{t} - 1}$ $= \frac{p+t}{t} \div \frac{p-t}{t}$ $= \frac{p+t}{t} \times \frac{t}{p-t}$ $= \frac{p+t}{p-t}$	✓divide numerator and denominator by cos *x/deel noemer en teller met cos x* ✓ $\frac{\tan x+1}{\tan x-1}$ ✓ $\frac{\frac{p}{t}+1}{\frac{p}{t}-1}$ ✓ $\frac{p+t}{t} \div \frac{p-t}{t}$ ✓$\frac{p+t}{t} \times \frac{t}{p-t}$ (5)
		[23]