

# Supplerende facitliste, E&P og Miniprojekter

## Kursusgang 1

20:  $x = (2n - 1)\pi$ , hvor  $n$  er et helt tal

$$26: \cos^2(\theta) + \sin^2(\theta) = 1 \Rightarrow \frac{\cos^2(\theta)}{\cos^2(\theta)} + \frac{\sin^2(\theta)}{\cos^2(\theta)} = \frac{1}{\cos^2(\theta)} \Rightarrow 1 + \tan^2(\theta) = \sec^2(\theta)$$

$$38: \sin(\pi \pm \theta) = \sin(\pi) \cos(\theta) \pm \cos(\pi) \sin(\theta) = 0 \cdot \cos(\theta) \pm 1 \cdot \sin(\theta) = \pm \sin(\theta)$$

## Kursusgang 2

2:

(a)  $y = \frac{\pi}{3}$

(b)  $y = \frac{2\pi}{3}$

(c)  $\frac{\pi}{4}$

(d)  $\frac{5\pi}{6}$

6:  $\frac{e^x}{1+e^{2x}}$

8:  $\frac{1}{\arcsin(x)(1+x^2)}$

18:  $\frac{2 \arcsin(x)}{\sqrt{1-x^2}}$

32:  $\frac{\pi}{6}$

36:  $\frac{\pi}{3}$

48:  $\frac{1}{5} \arcsin(x^5) + c$

56:

### Kursusgang 3

2:

$$(a) \left(-\sqrt{2}, \frac{\pi}{4}\right), \left(\sqrt{2}, \frac{5\pi}{4}\right)$$

$$(e) \left(2, -\frac{\pi}{4}\right), \left(-2, \frac{3\pi}{4}\right)$$

$$(f) \left(-2\sqrt{3}, -\frac{\pi}{6}\right), \left(2\sqrt{3}, \frac{5\pi}{6}\right)$$

$$6: x^1 + y^2 = 25 \Leftrightarrow r^2 \cos^2(\theta) + r^2 \sin^2(\theta) = 25 \Leftrightarrow r^2 = 25$$

### Kursusgang 5 - miniprojekt 1

$$4: P_4(x) = 1 + x + x^2 + x^3 + x^4$$

$$R_4(x) = \frac{1}{(z-1)^6} x^5$$

$$16: P_4(x) = 1 + 2(x - \pi/4) + 2(x - \pi/4)^2 + \frac{8}{3}(x - \pi/4)^3 + \frac{10}{3}(x - \pi/4)^4$$

$$R_4(x) = \frac{16}{120 \cos^2 x} + \frac{\sin^2 x \sin^4 x}{\cos^4 x \cos^6 x} (x - \pi/4)^5$$

$$6: P(x) = x - \frac{1}{2}x^2 + \frac{2}{3!}x^3 - \frac{6}{4!}x^4$$

$$R_4(x) = \frac{1}{5(z+1)^5} x^5$$

### Kursusgang 6

$$2: \frac{4}{3}$$

$$10: \frac{2}{50^{3/2}}$$

$$16: (1, 1)$$

44:

46:

## Kursusgang 8

38:  $z = 1$

58:

- (a) Opfylder Laplaces ligning
- (b) Opfylder ikke Laplaces ligning
- (c) Opfylder Laplaces ligning
- (d) Opfylder Laplaces ligning

## Kursusgang 11 - miniprojekt 2

Del I:

a:  $z = 12x + 8y + 16$

b:  $(0, 0), (-3/2, \sqrt{3/2}), (-3/2, -\sqrt{3/2})$

d: maksimum:  $f(-6, 0)$ , minimum:  $f(-5/2, \sqrt{7/2})$

Del II:

a:  $\nabla F(x, y, z) = 2j + 2k$

b:  $D_u F = \frac{2}{3}$

c:  $f(0, 0) = 3z - \sin(z) = 0 \Rightarrow z = 0, f_x(0, 0) = 0, f_y(0, 0) = -1$

## Kursusgang 19

8:

(a)  $-e^z$

(b)  $e^z$

12:

(a)  $3 \cos^3(\theta) \sin(\theta) - \sin^3(\theta)$

(b)  $4 \cos^3(\theta) \sin(\theta) - 4 \cos(\theta) \sin^3(\theta)$

### **Kursusgang 20**

424:  $z = 1 + i, z = -3 - i$

426:  $z = -3i + 2, z = i + 1$

446:  $B = 8i + 4\sqrt{6}\sqrt{2}, |B| = 16, \arg(B) = \frac{\pi}{6} + 2k\pi$

478:  $z = \pm\sqrt{2}, z = \pm 2i, P(x) = (z^2 - 2)(z^2 + 4)$