**Hjemmearbeid matematikk – eksamensklassen** **Ark 2**
**Leveres mandag 26. august 2013**

**Løsningsforslag**

Oppgave 1. Regn ut.

a) $2 + 3 \cdot 5 = 2 + 15 = \mathbf{17}$

b) $20 - 10 : 2 + 3 \cdot 2 = 20 - 5 + 6 = \mathbf{21}$

c) $10 - (-3) - 5 - 7 = 10 + 3 - 5 - 7 = \mathbf{1}$

d) $-6 - (-2) \cdot 2 = -6 - (-4) = -6 + 4 = \mathbf{-2}$

e) $(-8) : (-2) + (-10) : 2 = 4 + (-5) = 4 - 5 = \mathbf{-1}$

f) $-(3 + 4) \cdot 10 = -7 \cdot 10 = \mathbf{-70}$

g) $-(2 - 4 \cdot 2) + 5 = -(2 - 8) + 5 = -(-6) + 5 = 6 + 5 = \mathbf{11}$

h) $3^2 + 4^2 = 9 + 16 = \mathbf{25}$

i) $-5^2 = \mathbf{-25}$

j) $(-5)^2 = \mathbf{25}$

k) $-3^2 \cdot (-2)^2 = -9 \cdot 4 = \mathbf{-36}$

l) $(5 + 2) \cdot 3^2 = 7 \cdot 9 = \mathbf{63}$

m) $(5 + 2 \cdot 3)^2 = (5 + 6)^2 = 11^2 = \mathbf{121}$

n) $5 + 2 \cdot 3^2 = 5 + 2 \cdot 9 = 5 + 18 = \mathbf{23}$

o) $-10\,(2^3 + 2^4) = -10\,(8 + 16) = -10 \cdot 24 = \mathbf{-240}$

p) $5 + (6 - 3)\,(8 - 6) = 5 + 3 \cdot 2 = 5 + 6 = \mathbf{11}$

q) $-20 + (-3 + 7)\,(-3) = -20 + 4 \cdot (-3) = -20 - 12 = \mathbf{-32}$

r) $-7 - (5 - 2)^2\,(10 - 2^3) = -7 - 3^2 \cdot (10 - 8) = -7 - 9 \cdot 2 = -7 - 18 = \mathbf{-25}$

Oppgave 2. Regn ut.

a) $5^{-2} = \mathbf{\frac{1}{25}}$

b) $6^{-2} = \mathbf{\frac{1}{36}}$

c) $10^{-4} = \mathbf{\frac{1}{10\,000}}$

d) $2^0 = \mathbf{1}$

e) $1^{-4} = \frac{1}{1^4} = \frac{1}{1} = \mathbf{1}$

f) $(-10)^{-2} = \frac{1}{(-10)^2} = \mathbf{\frac{1}{100}}$

g) $(-10)^{-3} = \frac{1}{(-10)^3} = \frac{1}{-1\,000} = \mathbf{-\frac{1}{1\,000}}$

h) $-10^{-3} = -\frac{1}{10^3} = \mathbf{-\frac{1}{1\,000}}$

Oppgave 3. Skriv som potenser. (Eksempel : $4^3 \cdot 4^6 = 4^9$)

a) $5^2 \cdot 5^6 = 5^{2+6} = \mathbf{5^8}$

b) $6^2 \cdot 6^7 = 6^{2+7} = \mathbf{6^9}$

c) $10^5 \cdot 10^4 \cdot 10^2 = 10^{5+4+2} = \mathbf{10^{11}}$

d) $4^8 : 4^3 = 4^{8-3} = \mathbf{4^5}$

i) $2^5 \cdot 3^2 \cdot 2^6 : 3^4 = 2^{5+6} \cdot 3^{2-4} = \mathbf{2^{11} \cdot 3^{-2}}$

e) $3^{11} : 3^3 : 3^1 = 3^{11-3-1} = \mathbf{3^7}$

f) $4^3 \cdot 4^6 : 4^2 = 4^{3+6-2} = \mathbf{4^7}$

g) $2^7 : 2^2 : 2^3 \cdot 2^5 = 2^{7-2-3+5} = \mathbf{2^7}$

h) $4^7 \cdot 4^2 \cdot 5^3 \cdot 5^3 = 4^{7+2} \cdot 5^{3+3} = \mathbf{4^9 \cdot 5^6}$

j) $5^3 : 2^4 : 5^2 \cdot 2^3 = 5^{3-2} \cdot 2^{-4+3} = \mathbf{5^1 \cdot 2^{-1}}$